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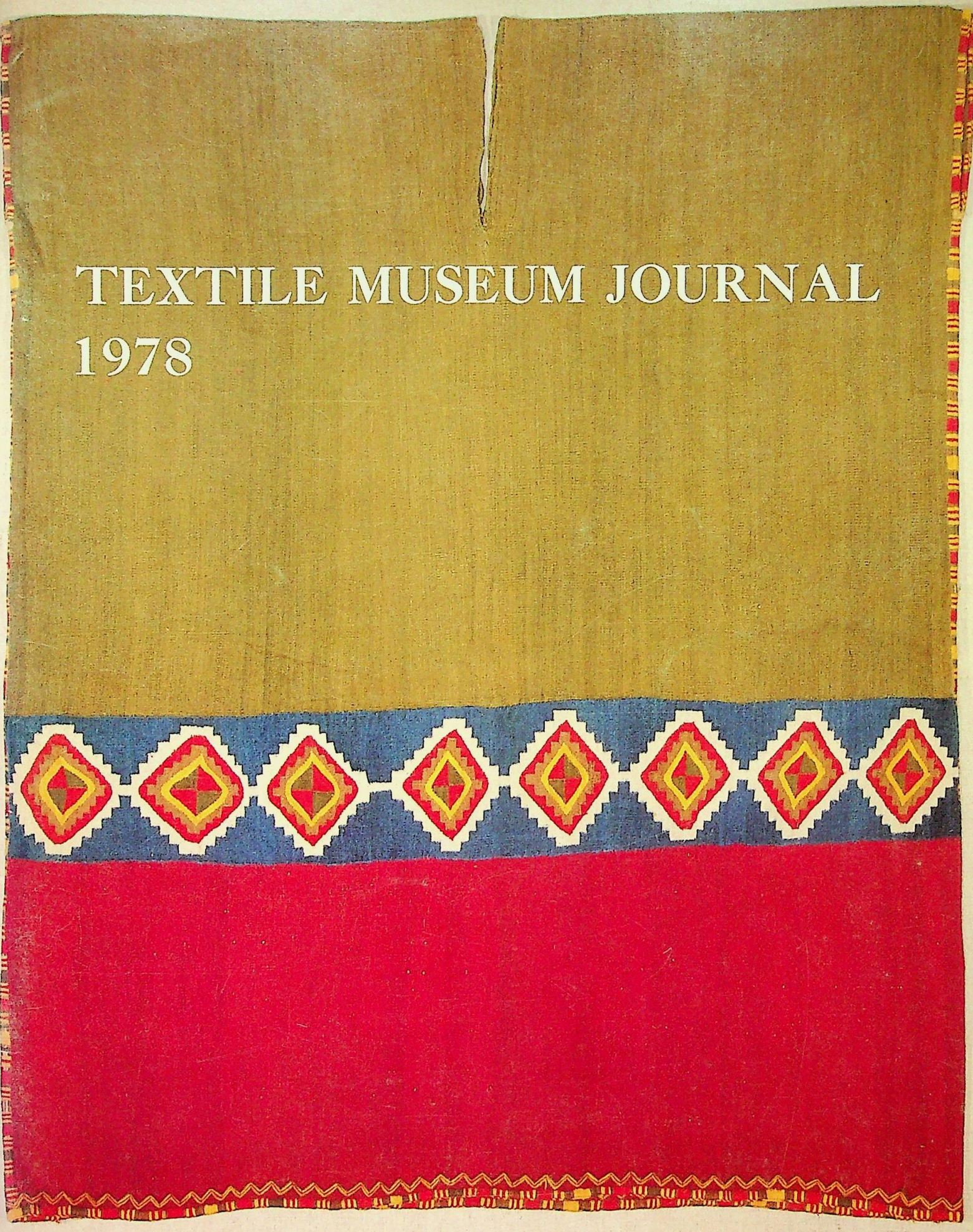

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COVER: Inca tunic with diamond band design. Interlocked tapestry weave, cotton warp, alpaca weft and embroidery. Peru, Late Horizon (1476–1534). 97 x 77 cm. Textile Museum 1977.35.10. Anonymous gift.

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TECHNICAL FEATURES OF INCA TAPESTRY TUNICS

ANN POLLARD ROWE

The Inca empire, which was at its greatest extent at the time the Spanish arrived under Pizarro in 1532, had its capital in Cuzco in the southern highlands of Peru, and included most of the coast and highlands of what is now southern Colombia, Ecuador, Peru, Bolivia, northern Chile, and northern Argentina. This empire had not had a long history; the pattern of wide-ranging conquest was begun only after Pachakuti assumed leadership in 1438. The north and central coasts of Peru were conquered in the 1460's and the south coast in the 1470's. The precise period of Inca domination of the coast is important because that is where most of the surviving Inca textiles have been found, the dry coastal desert being more conducive to textile preservation than the wet/dry season climate of the highlands.

Of those textiles found on the coast that have definite Inca affiliation, men's tapestry-woven tunics are the most important. Like most pre-Columbian garments, they are made from a rectangular cloth woven to size. To form a tunic, the fabric is folded over and sewn up the sides, leaving a space at the top for armholes. The neck slot is woven in. The tunics were knee-length and worn unbelted (see Fig. 1). The tapestry technique, in which the designs are formed by wefts discontinuous in each color area, was often used in ancient Peru for high prestige garments. Although most Inca tunics have relatively simple geometric designs, the weaving in many examples is extremely fine, with thread counts as high as 15 warps and 100 wefts per centimeter. Tight state control resulted in tunics that were relatively standardized in size, technique, and design.

As the result of a generous gift, the Textile Museum has recently acquired two Inca-style tapestry-woven tunics. These tunics are similar to each other in design and correspond to a standard category of Inca tunics known in other examples as well. Nevertheless, each adds something new to our knowledge of Inca weaving. One of the two tunics (Fig. 4), though completely woven, lacks side seams and embroidered finishes, so that its selvedges and other structural features are clearly exposed. This opportunity for study led to detailed technical analysis for comparison of some forty-five other available examples of Inca tunics and fragments, including a number of other previously unpublished examples, which are also presented here for the first time. There were interesting consistencies and inconsistencies among these examples, as will be described below. The second tunic (see cover and Figs. 22-24), more striking than the first for its stunning color and excellent state of preservation, offers important technical contrasts with the first and, moreover, was found folded in a particular way. Other evidence on the folding of Inca tunics, which came to light in the course of research for this article, suggests that there may have been a consistent practice in the matter.

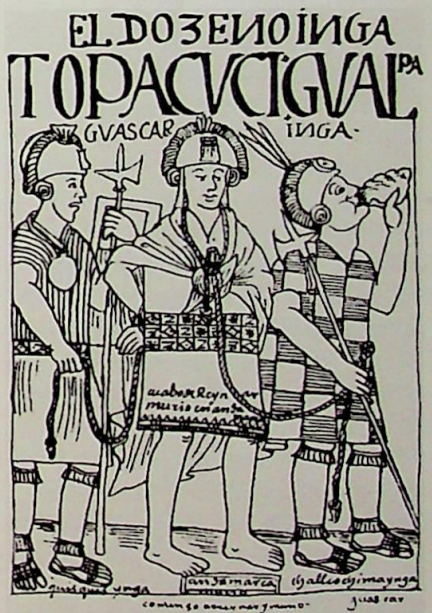

Fig. 1 Waskhar (center), a claimant to leadership of the Inca empire, is taken prisoner by soldiers of his rival, 'Ataw Wallpa. The civil war between these two leaders made conquest easier for the Spanish. Waskhar is shown without sandals or leg bands, which he would have worn in happier circumstances. All three men wear military helmets, and Inca style tunics similar to those in Figures 2 and 26. After Guaman Poma, p. 115 (see note 2).

BACKGROUND

One reason for the technical emphasis of this article is that the documentary, archaeological, and stylistic aspects of Inca tapestry tunics have been definitively discussed in a recent article by John Howland Rowe, which explores the degree of standardization in size and design among the known examples.[1] His findings are briefly summarized here as background to the present study.

Spanish colonial documentary sources indicate that fine cloth, called *qompi*, was woven by the *mamakuna* or cloistered women for religious purposes and for the Inca ruler, by the wives of provincial administrative officials for the Inca ruler, and by men called *qompi-kamayoq*, who specialized in weaving qompi to meet their labor tax obligation to the government. The word qompi probably refers primarily or exclusively to tapestry-woven cloth. Standardization in technique and design seems most likely with the specialized production of the qompi-kamayoq. Except for that saved for religious purposes, the entire production of qompi seems to have gone to the Inca government, and indeed no one was permitted to wear a qompi garment unless it had been bestowed as a gift by the ruler. Such gifts were commonly given to men to create or reinforce bonds of loyalty, for example to colonists resettled in areas remote from their original homes, as rewards for service in war or administration, and to nobles at four-month intervals when they presented tribute to the Inca ruler. Because of such redistribution, it may well be that a tunic was not made in the area in which it was found in recent times.

When the Spanish arrived and altered the taxation system, the context in which qompi was made and distributed changed also. After the conquest, the qompi-kamayoq wove tapestry on commission for both the Spanish conquerors and the indigenous nobility. Now the design could be specified by the customer: the Spanish ordered hangings and covers with European floral designs and coats of arms, and the Inca nobility took the opportunity to obtain more elaborate garments than they had been allowed under pre-conquest sumptuary regulations. This kind of tapestry weaving appears to have continued to the end of the Colonial Period. There are elaborate tunics in highland collections that, though at times

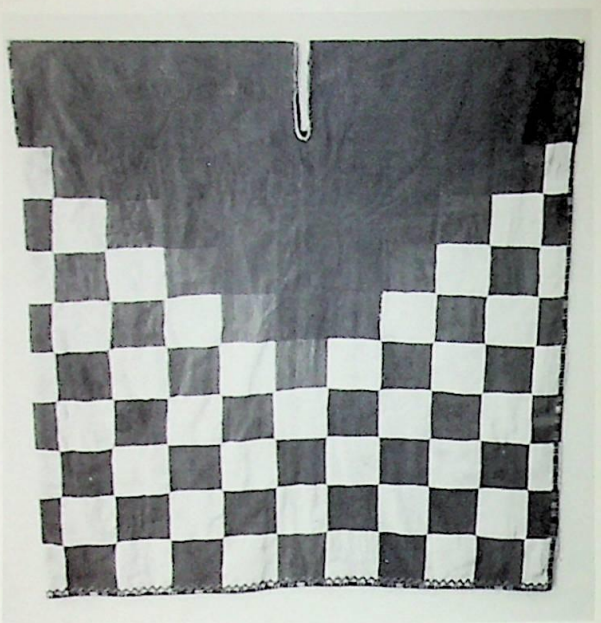

Fig. 2 Black and white checkerboard tunic. The "black" squares are actually dark brown in this example. 86.5 x 78 cm. Private collection, Los Angeles.

quite worn, do not appear to have been buried and are probably heirlooms from this period. They do generally differ in design from those tunics found buried in the coastal desert, which are likely to date from before the Spanish conquest, that is, before the Inca distribution system was disrupted.

The drawings in the chronicle of Guaman Poma (Fig. 1)[2] and designs on Inca ceramics provide comparisons which made it possible to identify Inca design elements in existing tapestry tunics. These include a zigzag line along the bottom of the tunic (compare Fig. 1 and the cover illustration), rows of small geometrically patterned squares, called *t'oqapu* (compare Fig. 1 and Fig. 26), a particular diagonal line motif that John Rowe calls the "Inca key" (Fig. 3), and a checkerboard color arrangement (compare Figs. 1-3). Using these criteria, Rowe identifies four standard Inca tunic designs, of which three or more examples are available, and mentions two more designs that are definitely Inca, but of which so few examples are available that it is not possible to evaluate their standardization. Tunics with designs relating to known coastal styles are excluded from Rowe's sample, although some do show Inca influence.

Two of the standard tunic designs have checkerboard layouts. Rowe describes seven examples with black and white checks and a

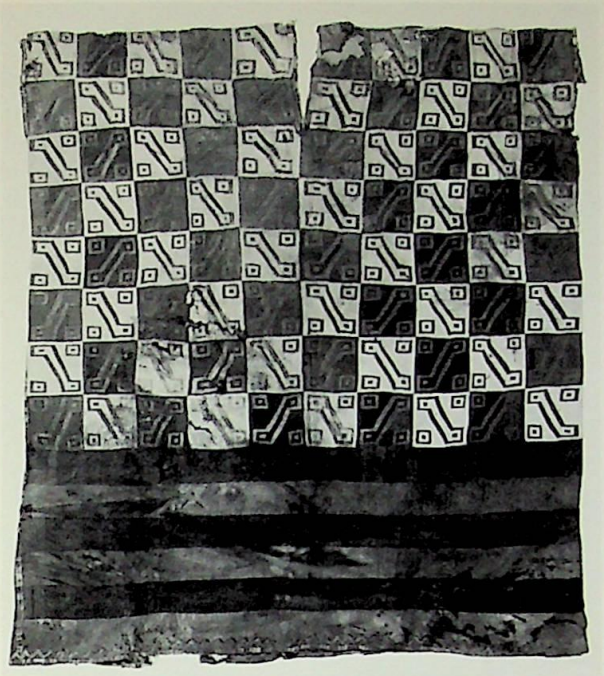

Fig. 3 Inca key checkerboard tunic. The squares are alternately yellow with red keys and purple with green keys. The horizontal stripes are purple and red. 86 x 72 cm. The American Museum of Natural History 41.2/964. Gift of John Wise.

red triangular yoke area. Two additional examples have come to light since his article was written,[3] and a third is illustrated here (Fig. 2). Guaman Poma depicts warriors of the conquest period wearing tunics with plain checks (Fig. 1). In the second type of checked tunic, the squares have the Inca key design. The upper portion of the tunic has seven or eight rows of ten squares each, and the lower part has six stripes. The stripes are generally purple (above) and red (below). The squares are usually red on yellow alternating with green or tan on purple; sometimes dark blue or brown is substituted for the purple. Rowe describes eight tunics with this design, and a ninth is illustrated here (Fig. 3).

The other two common standard designs are mostly solid color, with a horizontal patterned band just below the center. Rowe describes three examples and one fragment with two or three rows of t'oqapu. One other complete tunic and two tunic fragments are presented here (Figs. 27-28). Although this type of tunic is frequently represented in Guaman Poma's illustrations of the conquest period and before (Fig. 1), fewer examples have been found on the coast than of the other designs described.

The second type of tunic with a central design band has a row of eight diamonds on each side. Each of the eight diamonds consists of a series of nested diamonds in different colors, with the central one quartered. Rowe describes five of these diamond-patterned tunics in his article. Four additional complete examples have come to light since then (Figs. 4, 5, 17, cover) as well as a number of fragments that add to the sample of design bands (Figs. 12-15, 19-21).

John Rowe summarizes what is generally known about the construction of Inca tunics —that they were woven sideways, with the warp in the short direction, on a vertical loom. The neck slot is woven in, which means that the warps are discontinuous at that point. The wefts are single interlocked, and the weft ends are carefully woven in, so that the tapestry is completely reversible. The tunics average 90-95 cm in height and 75-77 cm in width. The lower edges as well as the armholes and neck slot are usually embroidered.

My analysis suggests a few more generalizations.[4] The warps are usually 3-ply (Z-spun, S-plied), either of dark brown or black alpaca, or tan or white cotton.[5] In the sample analyzed, the standard checkerboard-patterned tunics have alpaca warps, and the banded tunics have cotton warps. A few examples have replied warps (Z-spun, 2-plied S, 2-replied Z).[6] The wefts are invariably 2-ply (Z-spun, S-plied) alpaca. Cotton (undyed) is not used for weft in patterned areas, but only in the plain areas of some patterned band tunics. It also is Z-2S. The most common warp selvedge has chained warp loops at both ends as well as the neck slot. A single heading cord is substituted in a few examples.[7] The side selvedges (at the lower edges of the finished tunic) have two to four heavier warps, usually composed of a replied yarn. Some use of eccentric wefts is characteristic of the weaving. Lazy lines are present only in a few examples that are also aberrant in other ways. The side seams are most often sewn with alpaca yarns in a close figure-eight stitch. In a few of those with cotton wefts, the figure-eight stitch is zigzagged rather than close.[8] The neck slot is overcast, but may have cross-knit loop stitch at the ends, where it is structurally weakest. There is often additional embroidery on the armholes and along the lower edge, usually in cross-knit loop stitch.

These technical features may be contrasted with those of coastal tapestry tunics, which are slit tapestry instead of interlocked, and which have 2-ply cotton warps oriented vertically in the tunic as worn. Coastal tunics are usually made of two loom widths sewn together except for a neck slot (the side seams sewn except for armholes). The seams are sewn in an unobtrusive overcasting stitch with cotton yarn. Sizes vary, but usually the tunics are short, and often they are wider than they are long. Some have sleeves. Usually neither the neck slots nor the armholes are embroidered. There may, however, be a separately woven fringe band sewn along the lower edge. Often the selvedges have no special treatment either on the sides or the ends; the wefts are simply beaten down against the warp loops. In some examples, one end is plain and the other has cut warps interlaced diagonally with their neighbors. Many coastal tunics, of course, were woven with techniques other than tapestry.

It is also interesting to compare the technical features of Inca tunics to those of Huari-style ones, since the Huari empire was also of highland origin, and it might be expected that some features of their tunics would indicate the continuation of a highland tapestry tradition. There are both similar and dissimilar features. Like Inca tunics, Huari tunics are woven in interlocked tapestry weave and worn with the warp sideways. Unlike Inca weaving, however, the tapestry usually employs lazy lines in plain areas, and the tunics are made of two separately woven pieces joined along the center front and back, leaving a gap for the neck slot. Huari tunics are usually of square proportions, although their length is comparable to that of Inca ones. The warp yarns are 2-ply, either cotton or alpaca or a combination. On one end, the selvedge usually has chained warp loops, and on the other, cut warps are interlaced diagonally, as in some coastal examples.[9] Each side selvedge usually has a paired warp or slightly heavier warp; this reinforcement is generally less obtrusive than on most Inca tunics. There is no embroidery along the lower edges. Usually the neck slot and armholes are narrowly overcast, and the side and center seams sewn with a close figure-eight stitch, narrower than on many Inca tunics. The seaming on the sides is broadly striped—another feature reminiscent of Inca practice.

TWO UNFINISHED TUNICS

The Textile Museum's unfinished Inca tunic (Fig. 4) will now be described in detail, with particular attention to what the exposed selvedges reveal about construction. A second unfinished tunic in the collection of Alfred C. Glassell, Jr. (Fig. 5) will also be described and compared to the first.

Fig. 4 Unfinished diamond band tunic. The colors of the diamonds are (outside to inside) yellow, green, red, black, white, and quartered red and black. The rectangles are black and white. 194 x 76 cm. Textile Museum 1977.35.9. Anonymous gift.

The Textile Museum piece is one of the few standard Inca tunics with 2-ply warps. It is actually made up of numerous lengths of warp yarns, and a few of these are the more usual 3-ply. Some of the ends of the warp lengths are visible, sticking out at the sides. In some places the warp loops projecting from the sides overlap, indicating that the warping was done with three lengths simultaneously (Fig. 11). In addition, there are many broken warp ends projecting from both faces of the fabric (see Figs. 10-11); in the finished tunic, these ends presumably would have been cut off close to the fabric. There is no one way of dealing with broken warps, but in many cases, the broken warp and an adjacent warp are both finished off, instead of a new length being added in the same place. The two adjacent warps are sometimes cut at the same point, and left to project on the same face (five examples) or one in front and the other in back (one example). With one exception, the two warp ends are not knotted together. In two places, the second warp that is finished off is not the one immediately adjacent, but the second one over. In other places, one of the two cut warps projects from the weaving, and the other is turned back into the weaving parallel to the other for a distance (four examples), or is interlaced parallel to the weft for a short distance. Though these form the majority of the repairs, there are also examples in which a new length has been added in the same place, and the ends left to project from the fabric, either both on one face (in three examples knotted) or one on the front and one on the back (in two examples); in two examples, one end interlaces parallel to the weft for one or two wefts.

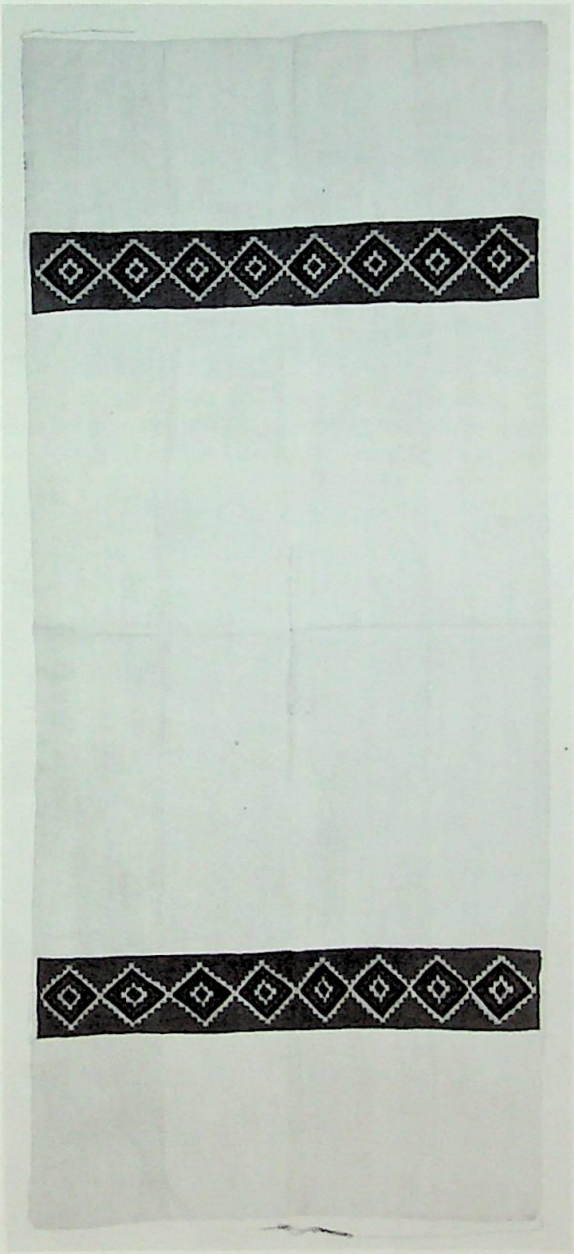

Fig. 5 Unfinished diamond band tunic. Found at Pinilla, Ocucaje, Ica Valley. The colors of the diamonds are (outside to inside) yellow, purple, red, green, yellow, and quartered purple and red. 189 x 76 cm. Collection of Alfred C. Glassell, Jr.

The unfinished Glassell tunic has the usual 3-ply cotton warps, with many fewer lengths apparent at the edges, no evidence of the overlapping of loops to indicate that three lengths were used at a time, and few broken warps. These features seem to be more typical of Inca tunics than the characteristics of the Textile Museum piece.

Both tunics have warp loops projecting from the edges of the weaving. In the Textile Museum tunic, these loops are untreated along one edge and chained on the other (Fig. 6). In the Glassell tunic, none of the warp loops are chained, and the warp loops are shorter (1-2 mm.) on one end than on the other (4 mm.) (Fig. 7). On the edge with the shorter loops, there is a partial heading cord near one end (Fig. 8). The heading is in two shots—the outer one a paired 2-ply yarn (Z-spun, S-plied) and the inner one a replied yarn (Z-2S-3Z). It seems likely that the piece originally had a heading cord all the way across when on the loom, but that the cord was removed after the piece was taken off; removal of the cord would leave warp loops, which

could then be chained. The finished cotton-ground diamond band tunic shown in Figure 17 also has a partial heading cord (a single heavy yarn) on one end, with warp loops chained on the remainder of the edge as well as on the opposite end where the loops are longer. It is likely that the end with the longer loops also originally had a heading cord. The most plausible explanation for the longer loops is that they were at top of the loom, and thus were the last to be woven. The end at the bottom of the loom would have had all the wefts beaten down against it as the weaving progressed, so that the warp loops would not be larger than the diameter of the heading cord. Because the last wefts at the top would have been inserted with a needle, it would have been logical to leave enough space so that the heading cord could be withdrawn easily. The heading cord at the bottom would have been considerably more difficult to take out, which may explain why it was not completely removed in the two examples.

On the weft selvedges of both unfinished tunics are four warps of heavy replied yarns (Figs. 6 and 7). In the Textile Museum tunic these are Z-2S-4Z on one end and Z-2S-6Z on the other end, and in the Glassell tunic they are Z-2S-6Z on one end and Z-2S-8Z on the other end. On each side, these four warps are made from a single yarn that turns close to the beginning and final wefts and does not project in loops. One end of this cord projects some distance from the corner, leading to the speculation that it may have been tied to the loom bar. In the finished tunics in Figs. 17 and 18, the weft selvedges are similar, though not as clearly visible. In the Textile Museum tunic (Fig. 18), the edge warp cord is Z-2S-3Z.

Perhaps the most interesting feature of these two unfinished pieces is the evidence they provide about how a tunic neck slot was woven. Since the slot is parallel to the weft, it is the warps that are discontinuous. In both tunics the warps are dovetailed over a heavy scaffold weft at this point (Figs. 9 and 10). The scaffold weft is longer than the neck slit, but not as long as the width of the weaving. Its ends hang loose on the inside of the tunic. It is a replied yarn, Z-2S-8Z in the Textile Museum tunic, and Z-2S-10Z in the Glassell tunic. To judge from contemporary weaving methods in the Cuzco area, the slot may have been formed by doing the warping over a stick, substituting the cord for the stick once

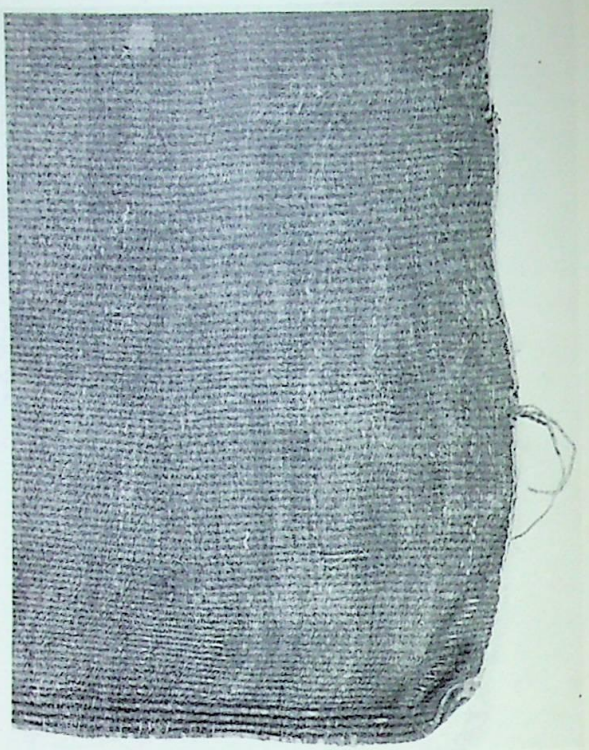

Fig. 6 Detail of a corner of the tunic illustrated in Figure 4, showing the chained warp end selvedge and heavier warps on the lower edge of the tunic.

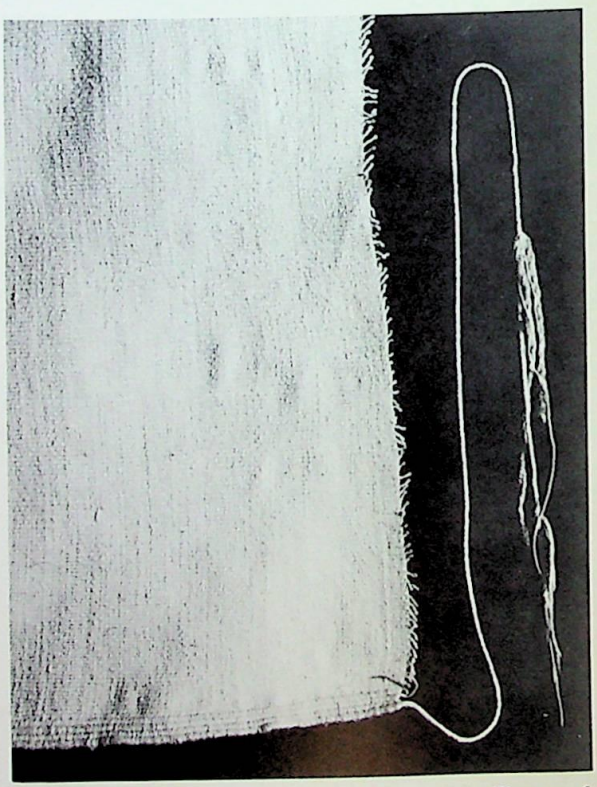

Fig. 7 Detail of a corner of the tunic illustrated in Figure 5, showing the end selvedge with longer warp loops, and side selvedge (at lower edge of the tunic) with heavier warps. The end of the edge warp cord projects at the corner.

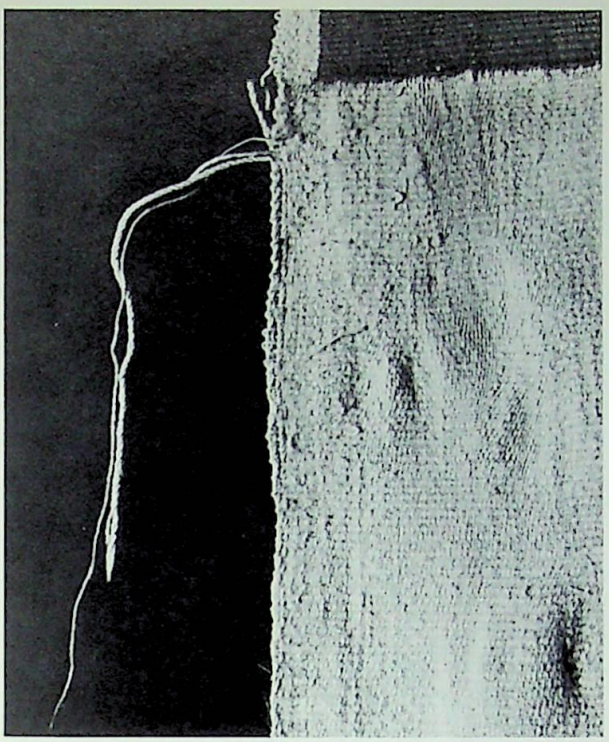

Fig. 8 Detail of the end selvedge of the tunic illustrated in Figure 5, on the end with shorter warp loops, showing the partially removed heading cord. A corner of the diamond band is visible at top.

the weaving had progressed to the point where the cord would be secure.[10] In both tunics the regular wefts are woven more tightly against the scaffold on one side than the other. It would be expected that this would correspond to the weaving of the end selvedges, and in the Textile Museum tunic it does, although in the Glassell tunic it does not. In both tunics, the regular wefts turn back (are discontinuous) at the ends of the neck slot for a short distance, corresponding to the width of the unwoven part of the neck slot (3-7 mm in the Glassell tunic, 8-10 mm in the Textile Museum piece). This feature would tend to reduce slightly the strain on the ends of the neck slot when the tunic was worn. In the Glassell tunic, but not in the Textile Museum example, some discontinuous wefts parallel the neck slot on the side where the warps are not completely woven and interlock with the wefts below the neck slot in a line extending 1 cm from the edge of the slot. In both tunics there is a bit of red alpaca yarn tied around the scaffold weft on the inside in the center of the slot, presumably to mark it (Fig. 9). To open the slot, one would simply remove the scaffold weft. The warp loops would then be chained, as they are in the finished tunic in Fig. 17.

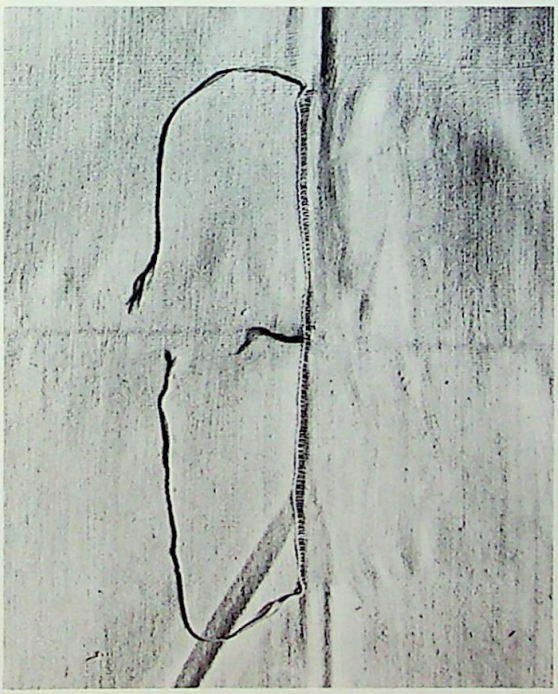

Fig. 9 Detail of the inside of the neck slot of the tunic illustrated in Figure 5, showing the scaffold weft still in place and the red alpaca yarn marking the center.

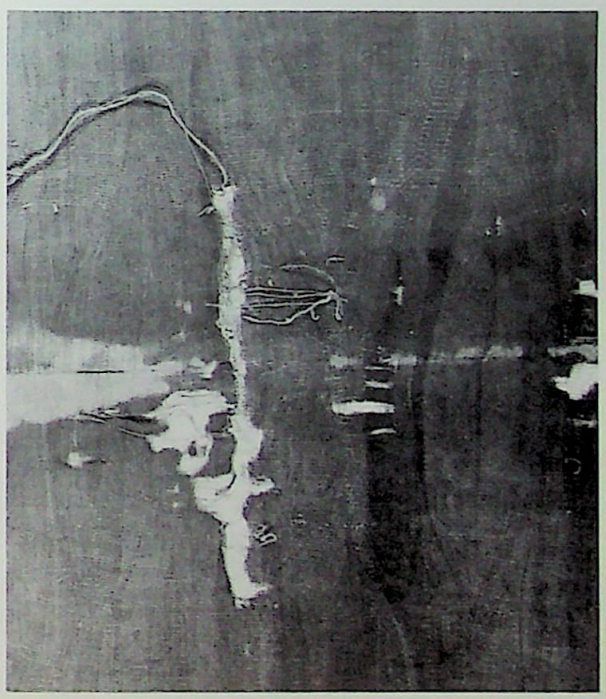

Fig. 10 Detail of the inside of the neck slot of the tunic illustrated in Figure 4, showing the scaffold weft still in place. The eccentric weaving in the tunic is clearly visible.

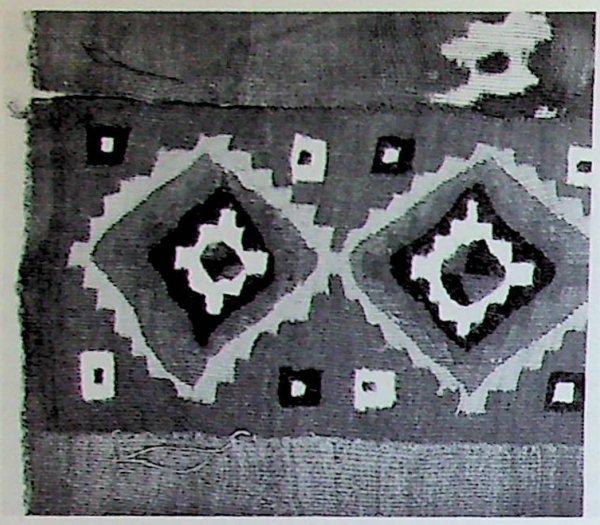

Fig. 11 Detail of the end selvedge of the tunic in Figure 4, showing the end with unchained warp loops with the loops overlapping, and the seaming of the patterned band to the plain areas.

In the Glassell tunic, the weft insertion is relatively even and straightforward, though there are some slightly eccentric wefts in the plain areas. The patterning is done in interlocked tapestry, with a few eccentric wefts to delineate the diagonals of the design. For 8-9 mm at the ends of the patterned bands, light cotton wefts extend across, continuous with the plain areas above and below. In the Textile Museum tunic on the other hand, the weft insertion is markedly eccentric and irregular in the plain areas, especially around the neck slot (see Fig. 10). In addition, the wefts are inserted singly in some areas and paired in others. Similarly irregular weaving is also found in the finished tunic in Fig. 18. It is possible that this relatively careless weaving represents a form of cheating on taxes.

A totally unexpected feature of the unfinished Textile Museum tunic is that the diamond-patterned bands appear to have been woven separately from the plain areas (Fig. 11). The edges of the bands are not interlocked with the plain areas, but sewn on with

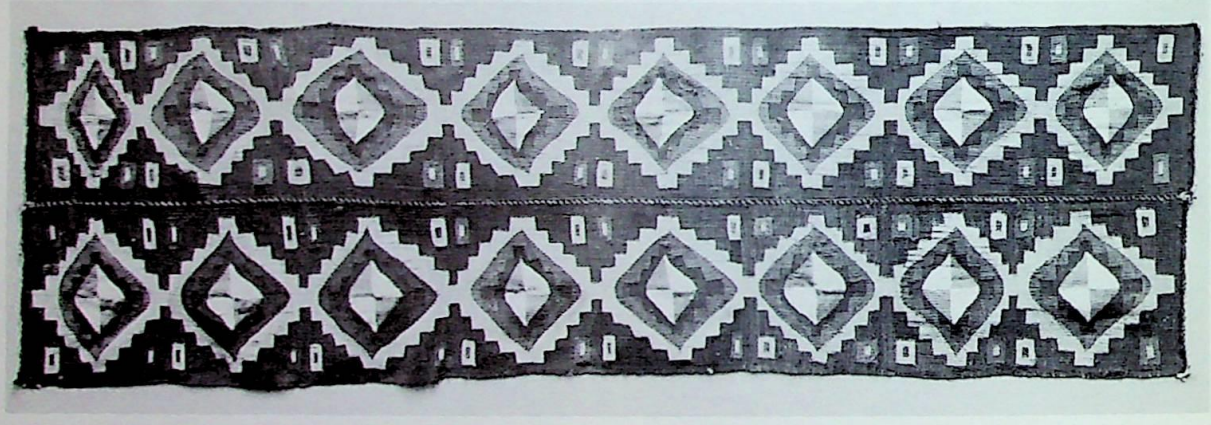

Fig. 12 Pair of diamond bands loosely sewn together with overcasting. Some of the joins between color areas are dovetailed, and one has a slit. The weft ends are not neatly finished on the back, an unusual feature. The colors of the diamonds are (outside to inside) yellow, tan, red, and quartered ochre and white. The rectangles are yellow and tan. 23 x 73 cm. Textile Museum 91.430.

Fig. 13 Separately made diamond band, one of a matched pair. The colors of the diamonds are (outside to inside) yellow, black, red, green (unstepped), and quartered black and white. The rectangles are black with yellow centers alternating with white with black centers. The "black" is actually a very dark brown. 12 x 73 cm. Collection of Helene Kovacs.

fine overcasting stitches. Moreover, the cotton headings at the ends of the bands are discontinuous with the plain areas instead of continuous, as in the Glassell tunic. The patterned band is also much more carefully woven than the plain areas, and it is possible that two different weavers were involved. This tunic is not an isolated case. Examples of separately woven bands not part of a tunic are known (Figs. 12 and 13). Sometimes too bands were cut and made into bags (Figs. 14 and 15).[11] Stitching instead of interlocking on the edges of the patterned bands is found in some other tunics as well, for example, the ones in Figs. 17 and 20. The tunic in Fig. 17 differs from the Textile Museum's unfinished one in that the cotton headings on the ends of the bands appear to be continuous with the plain areas, indicating that the entire tunic was woven on the same loom setup. In addition, the weaving in the patterned band is not especially skillful, and the diamonds are somewhat puckered. It is possible that the weaver was simply saving himself time and trouble by not interlocking the bands.

Evidently, the patterned bands were sometimes cut out of completed tunics in antiquity. An example is the fragment shown in Fig. 16. It was found by the archaeologist Max Uhle, so is unlikely to have been cut in recent times. The bands in this piece are regularly interlocked with the ground.

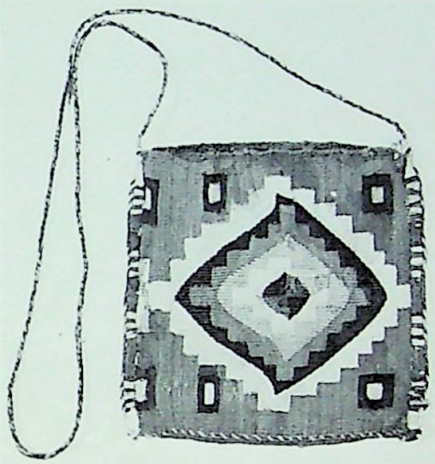

Fig. 14 Bag made from a diamond band. The colors of the diamonds are (outside to inside) yellow, black, red, ochre, yellow, and quartered black and red. The rectangles are black and yellow. The "black" is actually a very dark purple. 12.5 x 11.5 cm. Textile Museum 91.254.

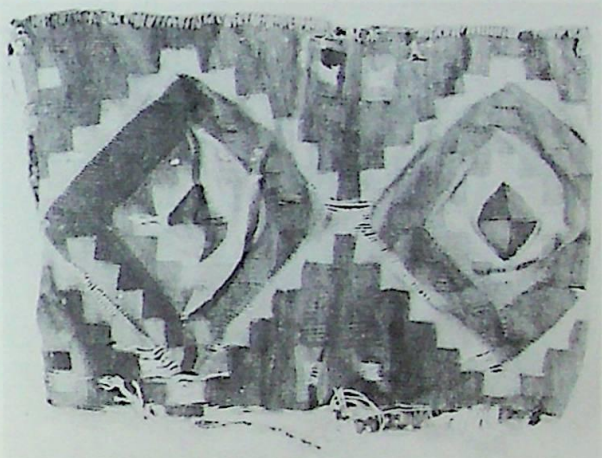

Fig. 15 Bag made from a diamond band. Found at Ocucaje, Ica Valley. The colors of the diamonds are (outside to inside) yellow, green, red, green, yellow, and quartered green and red. The rectangles are green, with white centers. The green is so faded that it appears gold-colored in many places. 10.5 x 14.5 cm. Lowie Museum of Anthropology, University of California, Berkeley, Uhle Collection, 4-4669e.

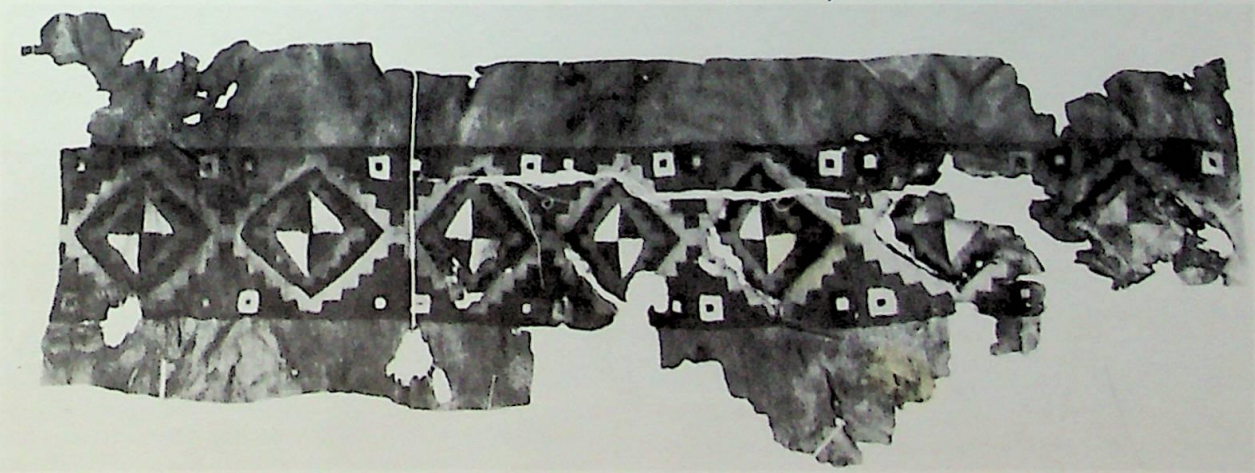

Fig. 16 Fragment from a diamond band tunic with tan cotton ground. Found at Olivar, Pativilca Valley. The colors of the diamonds are (outside to inside) yellow, black, ochre, and quartered red and white. The rectangles are black and white. 25.5 x 67 cm. Lowie Museum of Anthropology, University of California, Berkeley, Uhle Collection, 4-7602.

The two tunics in Figs. 17 and 18 are finished garments similar to the unfinished Glassell and Textile Museum pieces described above. All have diamond-patterned bands and plain areas with undyed cotton wefts. The tunics in Figs. 5 and 17 are light tan, which seems to be the most common color. The Textile Museum's unfinished tunic (Fig. 4) is almost entirely stained dark brown, but an unstained area near the shoulder is grey. The finished tunic in Fig. 18 is tan above the patterned band and grey below. The use of grey cotton is unusual in Peruvian textiles generally, but apparently within the repertoire of Inca weaving.

The finishing of the tunic in Fig. 18 is perfunctory. The neck slot is only loosely overcast and the armholes not finished in any way. The side seams too are loosely overcast. The sewing is done with tan cotton yarn. This simple stitching appears to be relatively unusual among Inca tunics, and it may be noted that the end selvedges of this piece are also unusual, retaining the heading cord instead of having chained warp loops. The finishing of the tunic in Fig. 17 is more typically Inca, with the neck slot and armholes closely overcast, and the seam done in a figure-eight stitch that zigzags across the seam in clusters of five stitches; tan cotton yarns are used for this stitching. In other examples, red alpaca yarn is used for the seam (Fig. 19).[12] A crude zigzag is embroidered in paired tan cotton yarns in double running stitch across the lower edge.

The tunic bands in Fig. 20 are the only ones in the sample with striped cotton plain weave areas. The stripes are about 5 mm wide, in olive green, white, tan, and a dark color now rotted out. The present piecing of the fragments, in which the plain areas have been completely removed from the edges of the bands that are sewn together and simply cut across the opposite edges, may be modern. The side seams are unusual in that they are of striped alpaca, similar to those of all-alpaca weft tunics, and the diamond band design also has some unusual features (see below).

These cotton-ground, diamond band garments appear to be the most humble type of Inca tunic, unimpressive in appearance on account of their dull, undyed cotton yarns and usually less carefully woven and finished than the others.

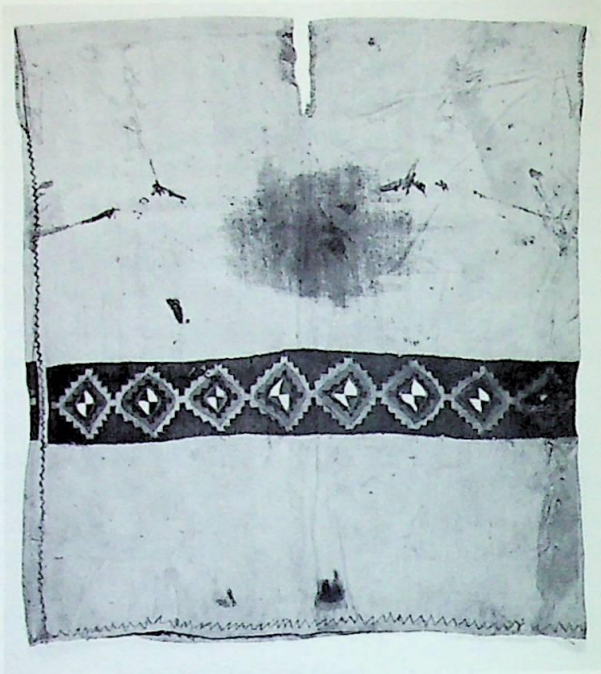

Fig. 17 Tunic with tan cotton ground and diamond band pattern. The colors of the diamonds are (outside to inside) yellow, ochre, red, ochre (unstepped), and quartered brown and white. 93.5 x 79 cm. The American Museum of Natural History 41.2/885.

Fig. 18 Tunic with cotton ground and diamond band pattern. The colors of the diamonds are alternately yellow, ochre, red, yellow, blue, and quartered red and white, and white, black, yellow, red, ochre, and quartered red and white. The rectangles are alternately black with white centers and yellow with ochre centers. The yellow has an orange cast. 91 x 73 cm. Textile Museum 1964.12.2.

ALL ALPACA WEFT DIAMOND BAND TUNICS

Some tunics with the diamond band pattern have colored alpaca wefts in the plain areas. These garments seem almost to form a separate category, since they are not only different in fiber content, but are also more finely and evenly woven, with much more elaborate finishing in alpaca embroidery. The second tunic recently given to the Textile Museum (cover and Figs. 22-24) is a particularly striking example of this type. While it is the only complete one in the sample, the Textile Museum has fragments of two other tunics, both with black alpaca above and below the patterned band (Fig. 21).[13]

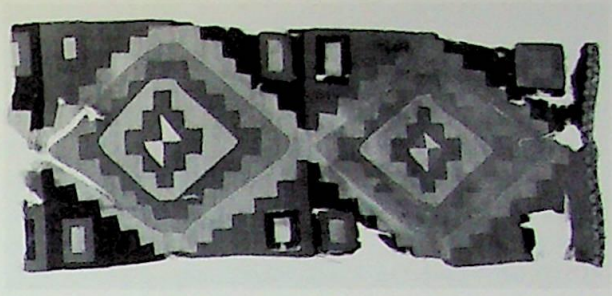

Fig. 19 Fragment from a diamond band, originally interlocked to a plain ground, probably tan cotton. The S-2Z warps are unusual. The colors of the diamonds are (outside to inside) yellow, ochre, red, yellow, tan, and quartered red and white. The rectangles are red with yellow centers in the black ground areas and black or brown with white centers in the red ground areas. 10.5 x 24 cm. The American Museum of Natural History 41.0/1116.

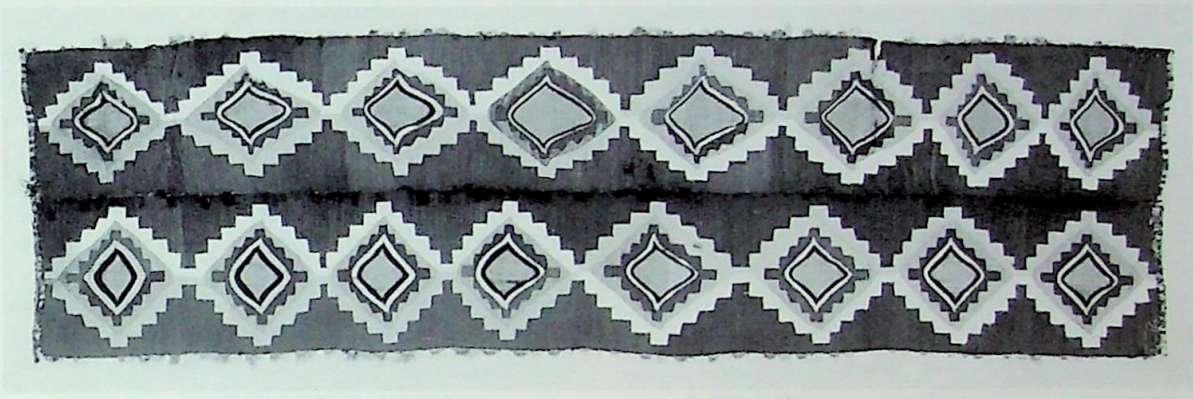

Fig. 20 Pair of diamond bands with remains of striped cotton ground fabric. The colors of the diamonds are (outside to inside) yellow and white, greenish-ochre, red, yellow, black, and ochre. One of the greenish-ochre diamonds near the center is more bluish. 23 x 75.5 cm. Museum of Fine Arts, Boston 42.489, Arthur Mason Knapp Fund.

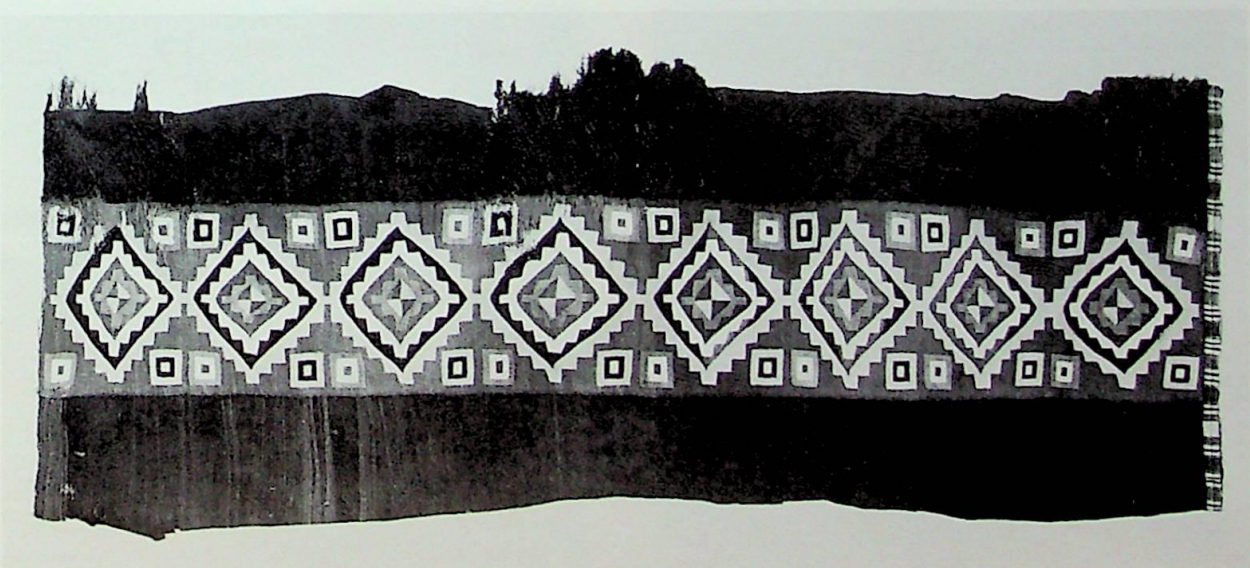

Fig. 21 Fragment (complete width) from a tunic with black alpaca ground and diamond band design. The colors of the diamonds are (outside to inside) yellow, black, white, red, tan, and quartered red and white. The rectangles are alternately yellow, black and white, and tan, white and red. 31 x 76.5 cm. Textile Museum 1962.30.18.

In all these examples, the wefts of the diamond bands are regularly interlocked with those of the plain areas. Along the shoulder line of the complete tunic, however, is a line of dovetailed wefts (Fig. 22). The apparent explanation for this feature is that the tunic was woven in two pieces, then put together after weaving by taking a yarn similar to the warp and passing it through two or three weft loops from one piece and then from the other and so on across the shoulder line. The yarn used for the join is first paired with a warp on one piece and then with a warp on the other, which would be unnecessary if the join had been done on the loom. Though none of the cotton-ground diamond band tunics have this feature, it is found in other tunics in the sample, most notably some of the checkerboard examples.[14] Such tunics could have been woven on a loom half as wide as a one-piece tunic would require.

The all-alpaca weft diamond band tunics have a special type of embroidered finishing which is also used on other Inca-style all-alpaca weft tunics with t'oqapu band and checkerboard designs as well as on some other kinds of Inca textiles. The neck slot is closely overcast in a color matching the ground. In the Inca key tunics, where several colors abut the neck slot, one of these is chosen for the entire overcasting (one of the Textile Museum's Inca key tunics has purple overcasting and one has green). The overcasting is in close parallel stitches, about 3-4 mm wide on each side, completely covering the edge. At the lower points of the slit, cross-knit loop stitch with one loop and long extensions is used, presumably for its greater strength. The ends of the neck slot nevertheless remain the weakest parts of the tunic and were the first to suffer damage (see cover illustration).

The armholes and lower edge are bound in cross-knit loop stitch with one loop, placed at the edge of the fabric, and long extensions, 6-8 mm (see Fig. 23). The side seams are sewn in a close figure-eight stitch 9-10 mm wide. These bindings and the seams are done in striped alpaca yarns. The stripes are in two different widths—about 2 mm wide, and about 8-10 mm—with six or seven narrow ones placed between the wide ones. A fixed color sequence is repeated in both the narrow and wide stripes, the sequence of the wide stripes being simpler than the narrow ones. For example, the color sequence of the wide stripes in the cover tunic (Fig. 23) is red, yellow, red, brown, red, green, and so on. The alternation of red with other colors is usual, though the alternating colors vary from one piece to the next. The narrow stripes have a color sequence that is more or less symmetrical around the non-red wide stripes, without ex-

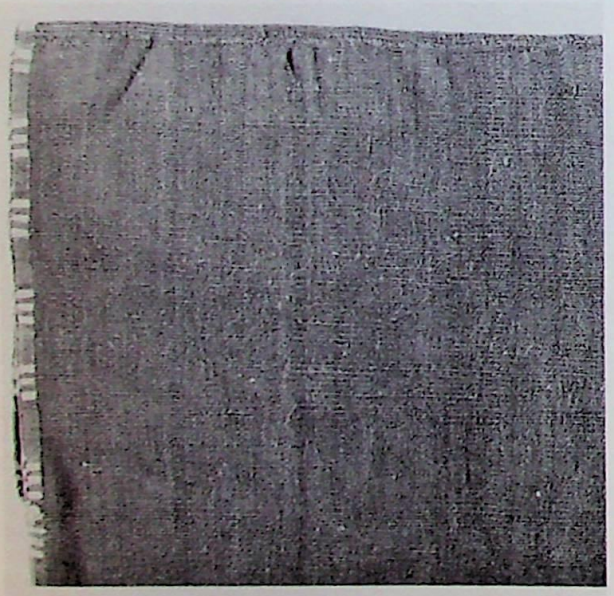

Fig. 22 Detail of the armhole and shoulder of the all-alpaca weft diamond band tunic illustrated on the cover, showing dovetailed join at the shoulder and cross-knit loop stitch binding on the armhole. Textile Museum 1977.35.10. Anonymous gift.

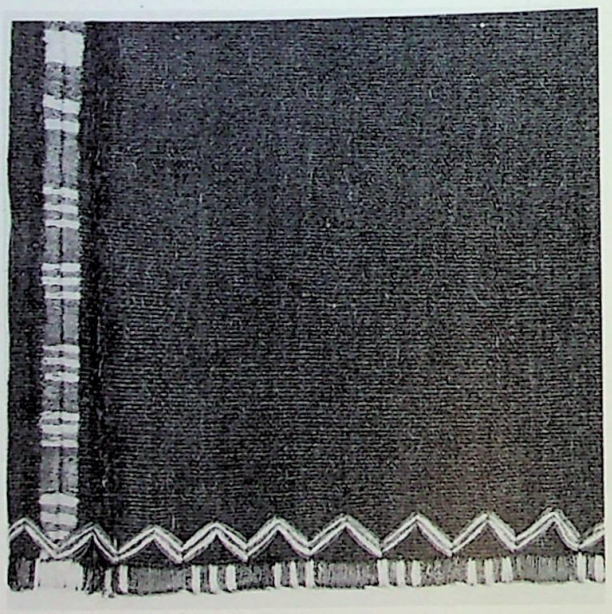

Fig. 23 Detail of the lower corner of the tunic in Figure 22 showing embroidered finishes: the striped alpaca side seam, cross-knit loop stitch binding on the lower edge, and zigzag.

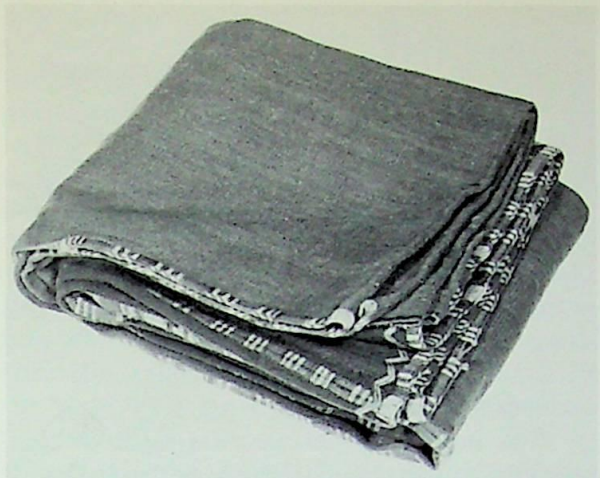

Fig. 24 Tunic illustrated on the cover, shown folded in sixteenths.

act repeats until the wide stripes repeat. The colors used on the lower edge are usually the same and in the same sequence as those on the sides, but there are exceptions, as for example on the tunic in Fig. 26. Usually the color sequence is broken at the bottom of the armholes and the bottom of the seam, where either cotton or white alpaca is substituted for a short distance.

The zigzag is made up of ten yarns, with a color change after every other yarn and the colors symmetrically arranged. The zigzag in the cover tunic (Fig. 23), for example, is made of two green yarns, then two yellow, two red, two yellow, and two more green. The ten yarns lying side by side measure 4 mm. They are done in double running stitch, so the zigzag looks the same on the inside as on the outside. It is 1.2 cm high, and there are 1.5-1.7 cm between the points horizontally. The height is typical, but the width is greater than in some examples, where it is as narrow as 1.1 cm.

The yarns used for this embroidery are usually loosely twisted Z-2S alpaca similar to the weft yarns. However, the red yarns in the cover tunic (Fig. 23) are, in addition, replied S. This is an unusual treatment, since replying is normally in the opposite direction from the plying. The Z-2S-2S yarns look superficially like multiple-ply yarns (Z-4S), but can be separated with a needle in two 2-ply yarns. One of the Textile Museum's black and white checkerboard tunics (1966.7.171) also has embroidery yarns of this type. Another type of yarn found in the embroidery of some Inca tunics is Z-3S alpaca (more loosely twisted than the Z-3S warp yarns). Both the Textile Museum black-ground diamond band tunics have embroidery yarns of this type.

The cover tunic was said to have been found folded (see Fig. 24), although when it was acquired by the Museum, the creases in the heavy fabric were no longer clear. The two tunics belonging to Alfred C. Glassell, Jr. (Figs. 5 and 31) were also found folded, in a tapia adobe architectural feature at Pinilla, at the site of Ocucaje, in the Ica Valley, where they had been placed as an offering unaccompanied by a human burial.[15] The creases in the all-alpaca weft tunic in Fig. 31 are faint, but those in the cotton-ground example are still clear. The staining and lines of broken yarns in the Textile Museum's unfinished tunic (Fig. 4) suggests an arrangement of folds similar to that of the other examples listed.

The unfinished Glassell tunic was first folded along the shoulder line as it would be when sewn (a fold that can be clearly seen in the Textile Museum's unfinished tunic also). The second fold in the Glassell tunic is in half, parallel to the neck slot. The next fold is in half again, parallel to the preceding fold. The succeeding fold is in half in the opposite direction, parallel to the patterned band. There seems to have been a final fold in the same direction as the preceding, but it is not clear whether the patterned band was folded inside or outside. As far as can be seen, the folds in the other examples listed were similar to those in the unfinished Glassell tunic.

Thus, the tunics are folded into sixteenths. When folded, they measure 19-20 by 22-23 cm, and several centimeters high, depending on the thickness of the fabric. The tunic pictured on the cover is comparatively thick, and measures 9 cm high when folded (Fig. 24). There is one recorded find of an Inca tunic in which a specific container was reported and collected along with the tunic. The container is a rectangular andesite box, and was acquired by Adolph Bandelier from an hacienda owner in Puno, near Lake Titicaca, for The American Museum of Natural History.[16] The dimensions of the tunic reportedly found in the box are 92 x 74 cm. If folded into sixteenths as described, it would measure approximately 18 x 23 cm. The inside of the andesite box measures 19 x 29 cm. Thus, the fit is perfect in one dimension and a trifle long in the other. The box is deep enough (18.5 cm at the edge, deeper in the

center) to hold at least two tunics and perhaps more.

Since the sample of diamond band tunics and fragments is now so large, some comments on the standardization of design can be made beyond those offered in John Rowe's article. In addition to the five examples reported by Rowe, four complete tunics, two fragmentary bands, three pairs of bands unattached to a tunic, and three examples of diamond bands made into a bag are reported here, forming a total sample of seventeen pieces. Of these, no two are identical, though they all share many features.

It is apparent that the blue ground of the band in the cover tunic is most unusual since fourteen of the other examples have a solid red ground, and two have a ground of particolored red and black (Fig. 19). The blue ground seems to have been chosen to harmonize with the red lower section and green upper section of the cover tunic. It is interesting that here the need for red in the lower section took precedence over the usual ground color of the diamond bands. It may be noted that red is used in the lower sections of the tunics in Figs. 31 and 32. These are the only other all-alpaca weft tunics in the sample with contrasting colors above and below the patterned band. The cover tunic may be aberrant among diamond band tunics in this respect (the tunic in Fig. 18 is the only cotton-ground example).

The usual number of diamonds in the bands is eight: eleven examples have this number and one has six (the other examples are incomplete). The outer diamonds are yellow in fourteen examples, so that the white of the blue banded tunic is again unusual, although white is also used for alternate outer diamonds in the tunic in Figure 18 and for the upper or lower outer diamonds of the bands in Fig. 20. The use of both yellow and white also seems to be unusual, since in all fifteen other examples the color sequence is the same in all the diamonds, which are laterally linked. In thirteen examples, the third diamond from the outside is red. In every case there is an alternation of stepped and unstepped diagonals. Eight of the examples have three stepped diagonals, and nine have two. Of the latter, seven have an unstepped diagonal band next to the center, as if to compensate for the lack of the third stepped diagonal (the exceptions may be seen in Figs. 12 and 16); the extra unstepped band in the design in Fig. 20 is unique in the sample. In every case but one (Fig. 20), the inner diamond is quartered. Thirteen of the seventeen examples have small rectangles between diamonds; the majority of these (ten) have two-color squares, and three have three-color squares. Four examples have no squares at all (the cover tunic, and those in Figs. 5, 17, and 20). In every piece except the bags, adjacent squares have different coloring.

The most frequently occurring color combination in the bands is red with shades of yellow, plus white and/or black. Eight of the seventeen examples fall into this group, provided the dark purple of the bag in Fig. 14 is counted as black. Three of these are without black and two are without white. Seven other pieces include green in addition to this basic scheme; in three of these the green is close to ochre. Blue appears instead of green in two other examples (Fig. 18 and the University Museum tunic, note 12).

The coloring of the band in the unfinished Glassell tunic (Fig. 5) is noteworthy, though not really unusual. In addition to red and yellow, purple and a brilliant emerald green are used. Such bright greens and purples are rare in pre-Columbian textiles generally, but are found in textiles of the late Ica style.[17] The purple and green that occur in some Inca key tunics are significantly duller shades than those in the Glassell tunic or in Ica textiles. The association with the late Ica style is plausible, because the tunic was found in Ica. Ordinarily, the Inca redistribution system would obscure such an association, but the fact that it is unfinished may be an indication that this tunic was never sent to Cuzco.

It is apparent from this summary that the fragment shown in Fig. 25 is of aberrant design, having the Inca key motif combined with features of the diamond band design.[18] There is nothing non-Inca about it; it simply does not correspond to the standard examples. The fragment is also unusual in having alpaca warps, whereas the other diamond band pieces all have cotton warps. The plain areas above and below the band are dark blue alpaca, and the seaming corresponds to that of other all-alpaca weft tunics.

Fig. 25 Fragmentary band with design combining diamonds and Inca keys, interlocked with dark blue alpaca ground above and below. Alpaca warps Z-2S-2Z. The colors in the band are principally yellow and red with white, dark green, dark blue and dark brown used in small areas. 10 x 50 cm. Textile Museum 91.121.

T'OQAPU PATTERNED TUNICS

In comparison with the sample of diamond band tunics, that of tunics with t'oqapu bands is small and consists more of fragments than of complete pieces. There are enough fragments, however, to indicate some technical similarities to the diamond band tunics. For instance, there seems to be a similar division between examples with all-alpaca wefts and striped alpaca embroidery and those with cotton plain areas and simpler sewing. The available cotton ground t'oqapu band fragments have alpaca seaming in solid color, either in a narrow close figure-eight as in the fragment in Fig. 27, or zigzagged (see note 8). Interestingly, the same t'oqapu designs may appear on both the cotton and the all-alpaca tunics.[19] The two Textile Museum fragments shown in Fig. 26 have a maroon alpaca ground and four different t'oqapu designs in three rows. The fragment in Fig. 27 has a cotton ground and three of the same t'oqapu designs that appear on the piece in Fig. 26. These two bands are also similar in that all the t'oqapu

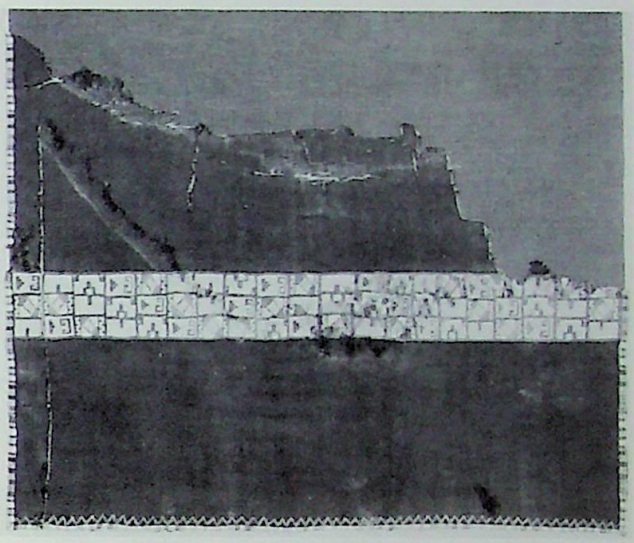

Fig. 26 Two fragments from a tunic with t'oqapu band design and maroon alpaca ground. The superposition of the two fragments obscures the regular diagonal repeat of the designs. Cotton warps Z-2S-2Z. 66 x 75 cm. Textile Museum 1960.13.7.

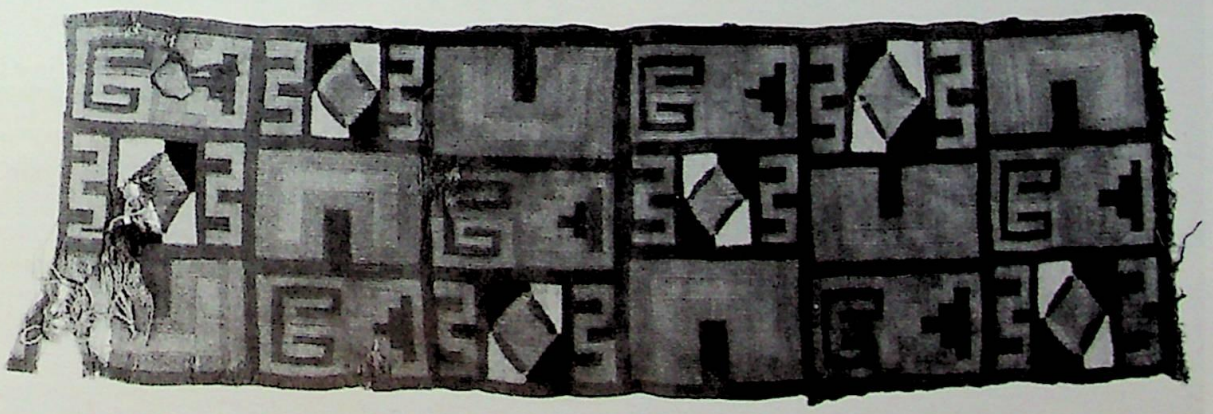

Fig. 27 Fragment from a t'oqapu patterned band, interlocked with tan cotton above and below. The t'oqapu designs are the same as those on the fragments in Figure 26. 9.5 x 27 cm. The American Museum of Natural History 41.2/523.

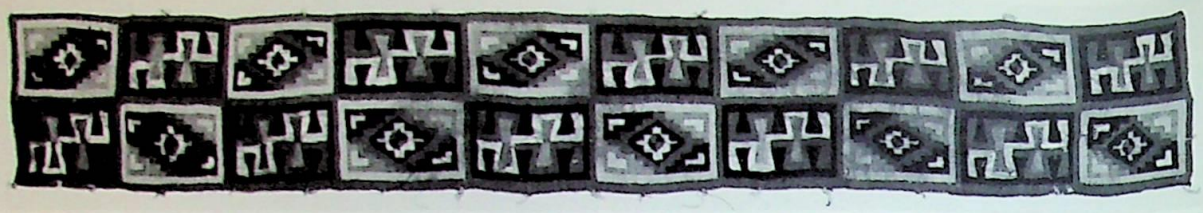

Fig. 28 Separately made t'oqapu patterned band. Some of the white alpaca weft yarns have rotted. 11.5 x 75 cm. The American Museum of Natural History 41.2/5399.

rectangles are outlined with red. These red lines are continuous vertically but not horizontally. In other pieces (for example, see Figs. 28-30), the t'oqapu rectangles are outlined alternately in red and yellow and more carefully lined up horizontally.

In addition, t'oqapu bands were sometimes woven separately and then sewn to the rest of the tunic, just as diamond bands were. Along part of one edge of the band in Fig. 28, a fabric with black alpaca wefts is sewn on with overcasting stitches. The function of the small tufts of cotton yarns along the remaining edges is unclear. In the other examples the wefts of the plain areas are regularly interlocked with the patterned band. The band in Fig. 28 has two rows of t'oqapu and two different designs. One of these is clearly related to the designs of the diamond bands; the other is one that also appears on the magnificent tunic in the Bliss Collection at Dumbarton Oaks, which has allover t'oqapu designs.[20]

The tunic found by Max Uhle at Pachacamac, a detail of which is shown in Fig. 29, is unusual in having a seam between the two rows of t'oqapu. The tapestry wefts turn back without interlocking between the edges of the two rows, and the slit is sewn in a figure-eight stitch in tan cotton around the edge warps (one warp from each side). The outer edges of the band are interlocked to the black alpaca ground and the piece is standard in construction in other respects as well.[21]

Another example of a t'oqapu band tunic, with black plain areas and two rows of t'oqapu, was found by Uhle in the Soniche sector of the cemetery of Old Ica. The grave dates from the early Colonial Period, but most of the objects in it, aside from some Spanish glass beads, had been taken from a Late Horizon grave just below it.[22] The tunic, folded at the shoulder line, had been held by one corner, then twisted slightly and placed in a ring around the head of the mummy. In view of the reuse of the grave goods, it is likely that this disposition of the tunic is an alteration of the original placement. The piece is unfortunately too fragile to be untwisted by any but a skilled conservator, and the t'oqapu designs cannot be clearly seen, but they appear to reflect some influence of the local Ica style. Similarly, the designs on the Pachacamac tunic (Fig. 29), especially the three birds, may reflect some central coast influence.[23]

The Ica tunic is technically of interest since it is unsewn, like the diamond band tunics in Figs. 4 and 5. It is woven in one piece, and the end selvedges still have the heading cord intact. There are broken warp ends projecting from the surface in plain areas, as in the tunic in Fig. 4, but the weft

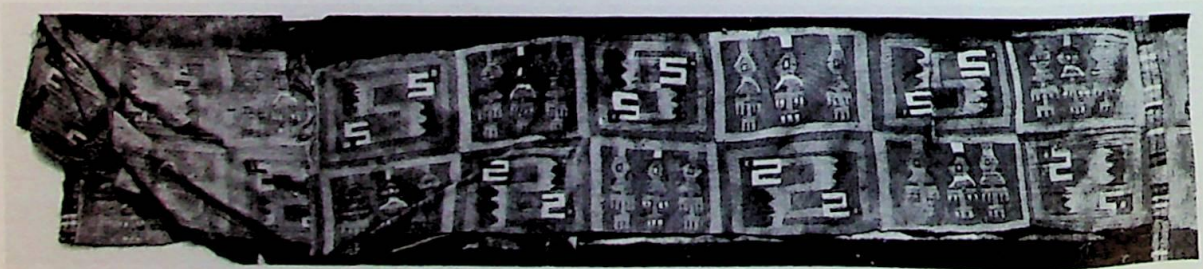

Fig. 29 Detail of the t'oqapu patterned band in a tunic with black alpaca ground areas. Found at Pachacamac, Lurin Valley. Height of patterned band 10.5 cm. University Museum, University of Pennsylvania, Philadelphia, Uhle Collection, 27569.

insertion is much finer and more even than that in the diamond band tunic. The weaving in the tapestry band is also exceptionally fine, with up to 19 warps and 96 wefts per centimeter.

Tunics with allover t'oqapu designs are rare and the Dumbarton Oaks example already mentioned is the only complete one known. The Textile Museum has a group of fragments from a tunic with allover t'oqapu designs (Fig. 30), but these t'oqapu are wider than they are tall, like those in the banded tunics, instead of being nearly square, like those in the Dumbarton Oaks tunic. The t'oqapu designs in the Textile Museum fragments are not identical to any in other known tunics, though they are similar to some; however, the sample of such tunics is too small for lack of identity to be significant. Blue appears extensively, in addition to the usual yellows and red. There are five different basic t'oqapu designs in the Textile Museum piece, one occurring in two variations that alternate in the repeat sequence, and another having several apparently random variations. Like the t'oqapu band designs (and unlike the Dumbarton Oaks tunic), they repeat on diagonals. These diagonals seem to be regular in the four squares next to the seams, but in the middle where there is a change of direction, there are irregularities. The change of direction after four squares is marked by an extra line of framing.

Three of the four largest fragments are shown in Fig. 30. The placement of these fragments in relation to each other and to the original tunic is indicated by the continuity of the diagonal repeats and by the direction of the designs that are not bilaterally symmetrical. These designs were apparently all woven in the same direction, and so are reversed on the front and back of the tunic. This feature is not visible on the fragments shown, since they are all from the same side of the tunic, but the top two fargments include parts of the opposite side of the tunic, on which this feature is apparent. The other side of the tunic also shows the continuity of the diagonal repeats between the top and central fragments. The continuity of the repeats between the central and bottom fragments in the four t'oqapu next to the seam is visible in the photo. The fourth fragment, not shown, does not adjoin the others, and is probably from an area near the opposite seam.

From these fragments, it appears that the tunic was originally twelve squares wide and eighteen and a half squares high, with the fold at the shoulder being in the middle of a row. This would put the original dimensions at about 87 cm high and 78 cm wide, which is within the range of standardization noted for the other tunics. It also conforms technically to the other standard examples, with 3-ply cotton warps and the striped alpaca embroidery found on other examples of all-alpaca weft tunics. In having cotton warps it is like the banded tunics rather than the checkerboard ones; the Dumbarton Oaks tunic also has cotton warps.

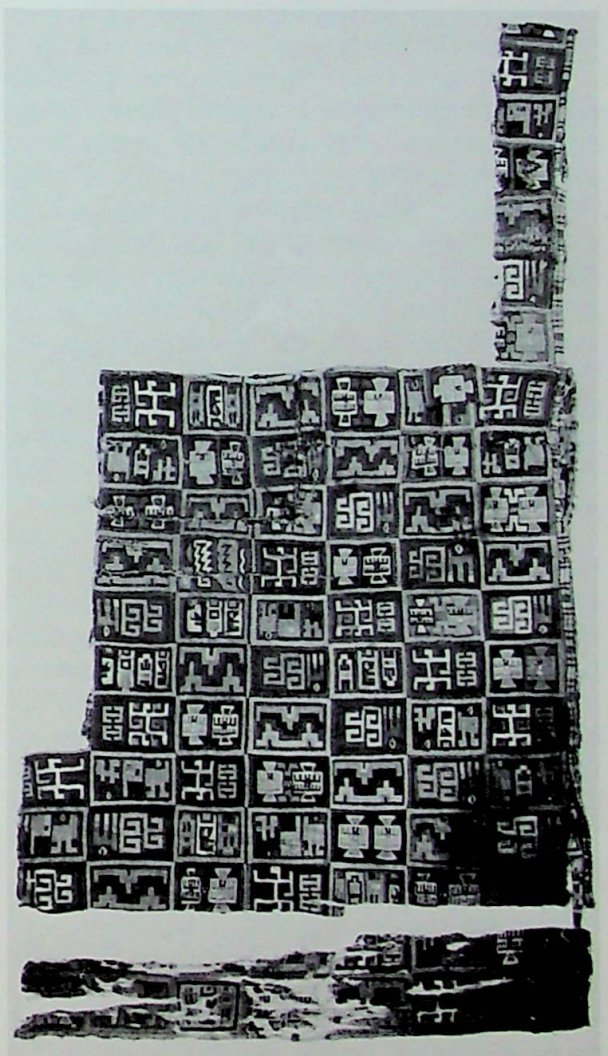

Fig. 30 Three fragments from a tunic with allover t'oqapu designs. 87 x 45 cm. Textile Museum 91.535.

ZIGZAG BAND TUNICS

One of the basic designs mentioned by John Rowe, of which too few examples are preserved to determine the degree of standardization, is one with a zigzag band design. He describes two examples, one found buried by itself as an offering on a mountain peak at 5,800 meters, and one in The Brooklyn Museum (Fig. 32). Two additional related examples have now come to light—an elegant all-alpaca weft tunic in the Glassell collection (Fig. 31), found with the unfinished tunic in Fig. 5, and a second example, with cotton plain areas, in The American Museum of Natural History (Fig. 33). Both these tunics have idiosyncratic features and thus are not of much help in resolving the question of standardization, but they are presented here to expand the sample.

The distinctive feature of the band designs in these tunics is that they are formed of small squares set corner to corner, with colors repeated on the diagonal. By contrast, the diamond bands previously discussed have some straight diagonals and continuous diagonal color areas. Three of the four tunics with designs of small squares have zigzag rather than diamond motifs, the exception being the Glassell tunic. Three of the four (with the same exception) also have small concentric rectangles in the triangular spaces of the band, a feature analogous to the diamond band design.

In spite of such exceptional features, however, the Glassell tunic (Fig. 31) resembles the Brooklyn Museum tunic in a number of important respects. In both tunics the upper part of the band is a different color than the lower part, namely, red in the upper part and green in the lower part. In both tunics, five different colors of small squares are used, beginning and ending with yellow: in the Brooklyn Museum tunic these are (top to bottom) yellow, black, red, green, and yellow; and in the Glassell tunic (outside to inside), yellow, maroon, white, red, and yellow. The lower parts of both tunics below the patterned band are red, with narrow yellow vertical stripes. The stripes in the Brooklyn Museum tunic are solid yellow, while those in the Glassell tunic are actually clusters of three stripes, two yellow ones enclosing a green one. The upper part of the Brooklyn Museum

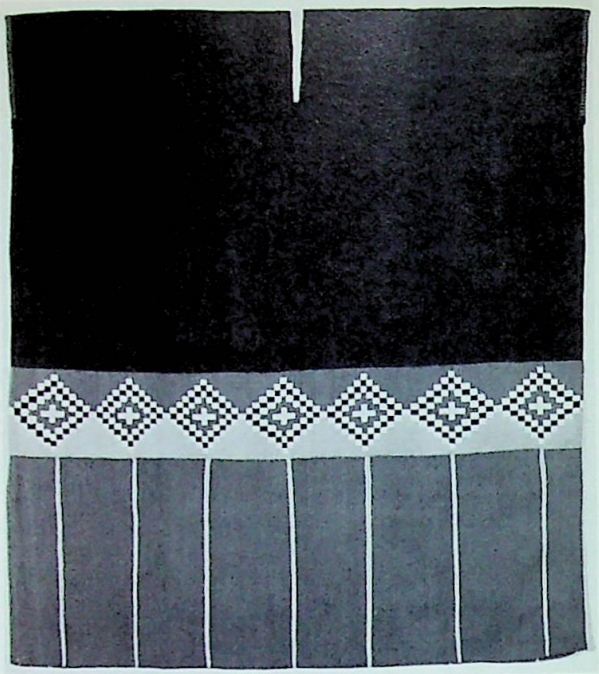

Fig. 31 Tunic with diamond band design formed of small squares. Found at Pinilla, Ocucaje, Ica Valley. White cotton warps. 95 x 77.5 cm. Collection of Alfred C. Glassell, Jr.

tunic is dark green and that of the Glassell tunic is maroon.

The many similarities in basic coloring are especially interesting, since the actual shades of color are quite different in the two tunics. For instance, the yellow in the Glassell tunic is a clear lemon color whereas that in the Brooklyn Museum piece is almost orange. Similarly, the green in the Glassell tunic is olive tinged with yellow, whereas that in the Brooklyn piece, though now faded, appears to have been originally a dark forest green. It is likely that the dyeing of the yarns was done in separate geographic areas, but that standardization of color arrangement transcended distance.

It is also of interest to note that neither of these tunics has the striped alpaca embroidery characteristic of all-alpaca weft tunics of the four most common standard types. In both tunics the seam is in a fine close figure-eight stitching, but it is only 3-4 mm wide, in a solid color that varies to match the color of the tunic. In the Glassell tunic, the seam colors match every change in color in the patterned band, while in the Brooklyn Museum tunic red is used all across the patterned band. In the Brooklyn Museum tunic, the armhole finish corresponds to that of the neck slot, an

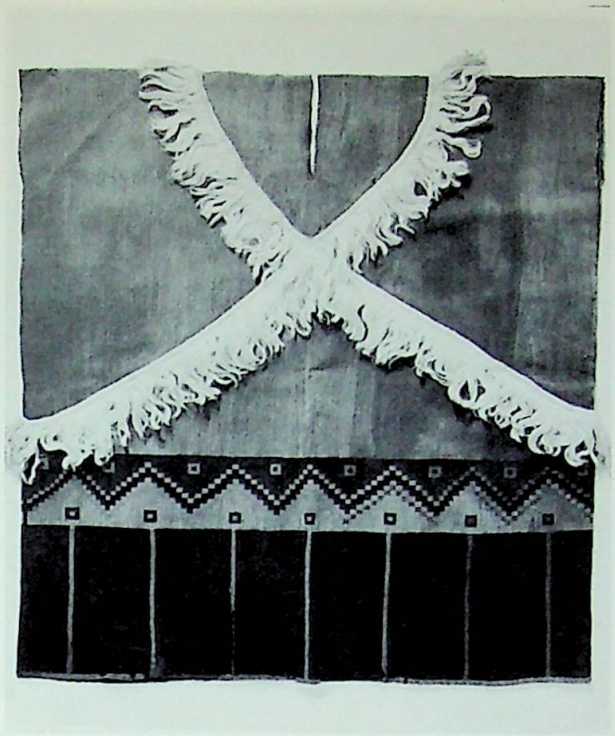

Fig. 32 Tunic with zigzag band design. Alpaca warps. 89 x 79 cm. The Brooklyn Museum 41.1275.106.

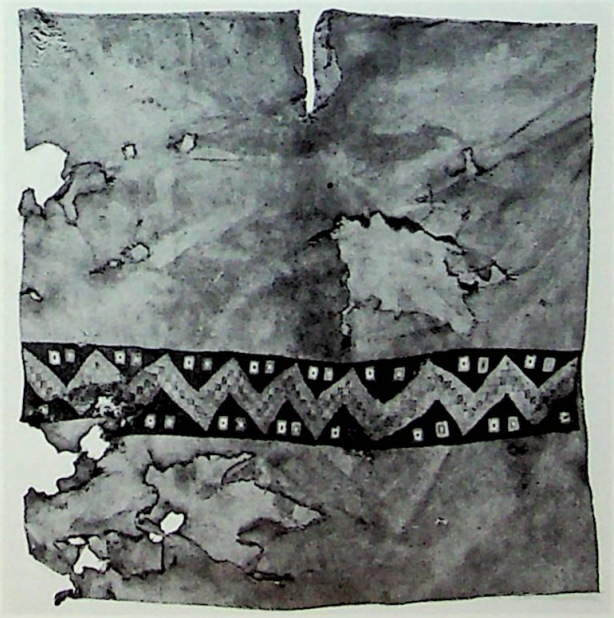

Fig. 33 Tunic with cotton ground and zigzag band design. 80.5 x 73 cm. The American Museum of Natural History 41.2/762.

overcasting in green alpaca to match the weaving, with cross-knit loop stitch at the lower points, but in the Glassell tunic, the armholes are bound in cross-knit loop stitch, with two stitches of red alternating with two of maroon (the neck slot having the usual plain overcasting in maroon). The Glassell tunic has no lower edge finish. The Brooklyn Museum tunic has a small fringe, made with only two warps, which is attached to the tunic by dovetailing using a third yarn in a manner similar to the shoulder joins on some of the other tunics. The warps are a replied alpaca yarn, and the weft loop extensions are twisted (Z). This type of fringe occurs on one other Inca tunic in the sample.[24] These fringes differ from those of coastal textiles, which generally have about five 2-ply cotton warps and untwisted weft loops, with the warp yarns secured instead by occasional close turning of the weft. They are usually sewn on with overcasting stitches in a cotton yarn.

The white fringe crisscrossing the Brooklyn Museum tunic is a unique feature, and has been understandably suspected as a later addition; nevertheless, the technical evidence suggests that it is in fact original. It is made with fine, unspun silky white alpaca fibers that are held in position with a row of cross-knit looping in a Z-3S (slack twist) yarn of the same fiber. The fringe band is sewn to the tunic with a running stitch, using a dark alpaca yarn identical to that used for the warp (Z-3S). The V-effect it creates at the neckline is comparable to the design of some other Inca tunics, for example the one in Fig. 2.

The American Museum tunic (Fig. 33) differs from the Brooklyn Museum and Glassell examples in having a plain tan cotton ground both above and below the patterned band, and in having a red ground both above and below the zigzag in the band itself. The zigzag consists of three rows of small squares (tan, gold, tan) surrounded by a yellow frame whose outer edges are unstepped. The small rectangles are alternately red framed by white and tan, and white framed by gold and yellow.

This tunic has some unusual technical features as well. The warps are S-3Z, opposite to the usual twist direction. The wefts of the plain areas consist of one Z-spun single and one S-spun single paired. There are lazy lines in the weaving above the patterned bands. In these bands most of the wefts are interlocked,

but on one of them, some of the squares have dovetailed wefts. In this band the top and bottom edges are dovetailed to the ground, though in the other band, this join is interlocked. It seems likely that this tunic was woven in an area where the local style was to use dovetailed joins in tapestry. The bands shown in Fig. 12 also have some dovetailed joins. These unusual technical features may be an indication that the design elements that do not correspond to the other available examples are not standard either.

Details of the edges and finishing of this tunic are standard. The warp loops are chained on the end selvedges, and there are three heavier warps on the sides (S-3Z-3S). There is a join along the shoulder line. Z-plied tan cotton yarns are used for the neck slot and armhole overcasting and for the side seam, which is in close figure-eight stitching.

PROVINCIAL INCA TUNICS

John Rowe also noted the existence of tunics in provincial styles with Inca influence. This subject as a whole is one that requires a separate presentation, but it is worth pointing out here that the Inca influence is not necessarily confined to design, but also extends to technique. Tunics with both Inca and non-Inca design features may be woven in interlocked tapestry with the warp in the short direction, using 3-ply yarns, heavier warp yarns on the side selvedges, and chaining of the warp loops on the end selvedges. The neck slot may be overcast, and side seams sewn in close figure-eight stitching. These are the most common Inca technical features found in provincial Inca-style tunics.

A few examples in the Textile Museum collection may serve to illustrate this point. One of the most readily recognizable provincial styles is that of the far south coast, in which the eight-pointed star is the most typical motif. Pieces in the local style have 2-ply alpaca warps and a design of rows of rectangles having either a repeat pattern woven in a complementary-weft weave, or the eight-pointed star motif in tapestry weave, interlocked but without eccentric wefts. The complementary-weft weave rectangles predominate, and sometimes the stars are omitted altogether. The colors are red, blue, green, yellow, and white.[25] The tunic in Fig. 34, on the other hand, has the eight-pointed star design exclusively and is woven entirely in tapestry, using eccentric wefts for the diagonals, and 3-ply cotton warps in the short direction, as well as the other Inca technical features mentioned above, except for a heading cord on the end selvedges.[26] The colors are the typically Inca red, white, and shades of yellow. The size of the tunic also corresponds to that of the standard Inca examples.

A second provincial Inca tunic is shown in Fig. 35. It is said to have been found at Ullujaya in the lower Ica Valley. Its Inca design features are the stepped triangular yoke design, and perhaps the square enclosures for the animal designs in the lower part of the tunic. The animals themselves are not an Inca motif, but are reminiscent of central coast design. They are definitely not Ica style, so it is probable that the tunic passed through Inca government hands before arriving in Ica. Technically, it has all the previously noted Inca features.

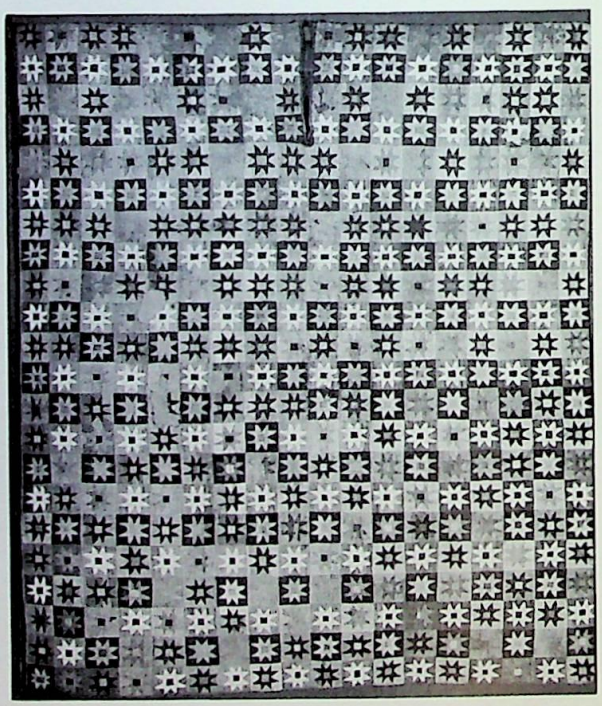

Fig. 34 Tunic with design of eight-pointed stars. Possibly made on the far south coast. 94 x 77 cm. Textile Museum 91.843.

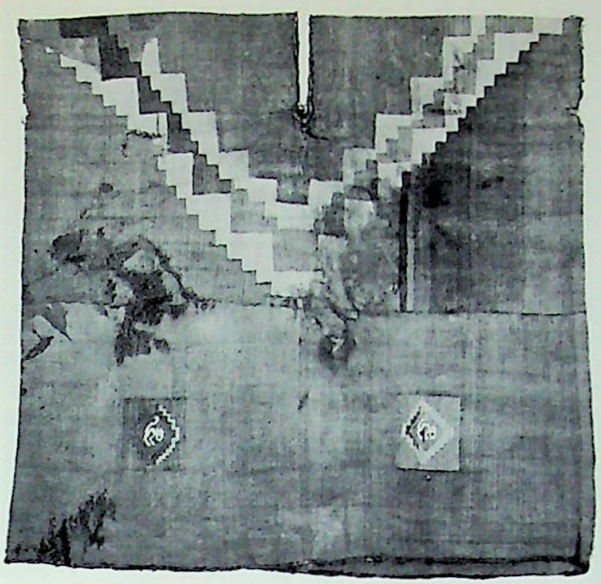

Fig. 35 Provincial Inca tunic. Said to have been found at Ullujaya, Ica Valley. 81 x 77.5 cm. Textile Museum 1966.7.46.

COLONIAL INCA TUNICS

Another group of Inca tunics has not yet been discussed, namely, those that date from the Colonial Period. As with the provincial tunics, a separate article could be written on the subject, but it is worth noting here that in addition to the greater differences observable in design, they contain some technical features distinct from those of pre-conquest tunics. The six tunics collected by Adolph Bandelier for The American Museum of Natural History, which were the principal Colonial examples available for this study are not in fact a coherent group either stylistically or technically, and may represent a range of time as well as different workshops.[27] Some may be as late as the early nineteenth century in date. They all do possess the most basic Inca technical features, namely, interlocked tapestry weave, with the warps horizontal in the finished tunic, and they are all of standard size.

Though these tunics were collected and probably also made in the highlands, all have cotton warps, which are 3-ply in all but one example (B-1503). The fact that they were collected in the highlands, whereas the others discussed were found on the coast, probably does not explain the differences, since it is likely that the Inca redistribution system resulted in some tunics of highland manufacture being carried to the coast, as the number of examples with alpaca warps suggests. Most Colonial tapestries with European designs also have cotton warps. It thus appears that cotton warps were usual in Colonial tapestry, regardless of place of manufacture. The appearance of the weft yarns is similar in the Bandelier tunics and pre-conquest examples, with the notable exception of some metal-wrapped yarns in one of the tunics (B-1500).

With regard to weaving technique, three of the tunics have some aberrant features. Two (B-1502 and B-1503) have lazy lines in plain areas of color, as well as exceptionally low weft counts (25-35 per cm, as opposed to 60-80 per cm). Two (B-1503 and B-1505) have one end selvedge with the warps cut and interlaced back, a feature found in some pre-conquest tunics, but not in Inca examples.

Probably of greater significance are the unusual embroidered finishes in the Bandelier tunics. None have all the finishes exactly like those of the pre-conquest examples, though in a few pieces, part of the finishing is comparable. Two of the five examples in which the side seams are preserved have unusual stitching on the seam, one with cross-knit loop stitch two loops wide (B-1500), and one with elaborate embroidered designs (B-1503). The edge bindings on these two pieces match the seaming. A third piece also has two-loop cross-knit loop stitch bindings, with a striped alpaca figure-eight stitch seam narrower than the striped seams of pre-conquest tunics (B-1506). Another tunic has armholes bound with cross-knit loop stitch eight loops wide, and a standard figure-eight seam in which the colors match the tapestry design (B-1504). In the only example with a zigzag along the lower edge, the design is much smaller than those found in pre-conquest tunics (B-1505), and two other tunics have different running stitch designs in this position, a stepped line (B-1502), or a row of crosses together with some additional embroidery just above the running stitch line (B-1503). These differences from the features of pre-conquest tunics, though individually slight, may assume greater importance as more tunics are examined.

NOTES

1. "Standardization in Inca Tapestry Tunics," *The Junius B. Bird Pre-Columbian Textile Conference*, Washington, D.C., 1979.

2. F. Guaman Poma de Ayala, Nueva Corónica y Buen Gobierno, ms. completed 1615. Facsimile edition, Université de Paris, Travaux et Mémoires de l'Institut d'Ethnologie, XXIII, 1936.

3. S. Izumi, *The Costume and Textile Ornament of the Pre-Inca Culture*, Tokyo, 1964, pl. 17, an example in the National Museum in La Paz. Another example is in the California Academy of Sciences in San Francisco, cat. no. 389–2357. D. M. Garaventa, "Peruvian Textiles," *Pacific Discovery* XXXI:4 (July-Aug. 1978), p. 25 upper right. An illustration of the tunic in Fig. 2 was published in an auction catalogue, Sotheby & Co., London, sale of Tuesday, 11th July, 1972, item 84, pl. XXIII.

4. The examples examined and analyzed for this study were the following: Black and white checkerboard tunics T.M. 1966.7.171 and 172 (Rowe, *op. cit.* BW-6 and 7, Figs. 2 and 3) and the example in the California Academy of Sciences (note 3). Inca key checkerboard tunics T.M. 91.147 and 1966.59.28 (Rowe, *op. cit.* IK-1 and 5, Figs. 4 and 6), AMNH 41.2/964 (Fig. 3 here), and a fragment three squares by one square, T.M. 1965.40.5, said to be from Nasca. T'oqapu band tunics UM 27569 (Rowe, *op. cit.* TW-1, Fig. 29 here), and UCLMA 16–6573 (see text and note 22), and fragments T.M. 91.120 (Rowe, *op. cit.* Fig. 7), 1960.13.7 (Rowe, *op. cit.* TW-3, Fig. 8, and here Fig. 26), and AMNH 41.2/523 and 41.2/5399 (Figs. 27 and 28 here). Diamond band tunics T.M. 1964.12.2 and 1966.59.27 (Rowe, *op. cit.* DW-2 and 4, Figs. 9 and 11—the former is Fig. 18 here), 1977.35.9 and 10 (Fig. 4 and cover, here), 1962.30.18 (fragment, Fig. 21 here), 91.430 (bands only, Fig. 12 here), and 91.254 (bag, Fig. 14 here), AMNH 41.2/885 (Fig. 17 here), and a group of fragments 41.0/1091, 41.0/1116 and 41.0/1135, all apparently from the same original (41.0/1116 is Fig. 19 here), UCLMA 4–8325 (Rowe, *op. cit.* DW-3, Fig. 10), 4–7602 (Rowe, *op. cit.* DW-5, Fig. 16 here), and 4–4669e (bag, Fig. 15 here), UM 27543 (Rowe, *op. cit.* DW-1, note 12 here), MFA 42.489 (Fig. 20 here), a single band in the collection of Helene Kovacs (Fig. 13 here), and the unfinished tunic in the Glassell Collection (Fig. 5 here). Zigzag band and related tunics, The Brooklyn Museum 41.1275.106, AMNH 41.2/762, and the Glassell Collection tunic (Figs. 31–33 here). The q'asana-patterned tunic in the Smithsonian, 307655 (Rowe, *op. cit.* Fig. 15). Tunic fragments with all-over t'oqapu designs, T.M. 91.535 (Fig. 30 here). Examples with aberrant use of Inca motifs, T.M. 91.121 (Fig. 25 here), 91.282 (A. R. Sawyer, *Ancient Peruvian Textiles*, Washington, D.C., 1966, Fig. 9). Provincial Inca tunics, T.M. 1966.7.46 (Fig. 35 here), 91.843 (Fig. 34 here), 91.816 (see note 26), and 1963.5.1 (M. E. King, *Ancient Peruvian Textiles in the Collection of the Textile Museum*, New York, 1965, no. 43). The published analyses of the Boston Museum's black and white checkerboard tunic (see note 5) and the Bliss Collection tunics at Dumbarton Oaks (see note 20) have also been taken into account. Also analyzed but not included in this summary are the six Bandelier tunics in The American Museum of Natural History, of Colonial date, and T.M. 91.8, a fragment from a Colonial tunic (see note 27).

5. Two tunics analyzed had some 2-ply and some 3-ply yarns (Fig. 4 and T.M. 1966.7.172, a black and white checkerboard tunic). The fragments in Fig. 19 have S-2Z warps. The black and white checkerboard tunic in the Museum of Fine Arts, Boston (Rowe, *op. cit.* BW-4, Fig. 1) has been reported as having 2-ply warps in A. Cavallo, "A Cap, a Shirt, and A Question Mark," Boston Museum *Bulletin* LVIII:311 (1960), p. 11, note 5. Larry Salmon was kind enough to recheck the tunic for me and reports that it does in fact have 3-ply warps.

6. The warps in T.M. 1960.13.7 (Fig. 26) are replied. Some of the warps in T.M. 1966.59.28, an Inca key checkerboard tunic, are replied; others are Z-3S. Two pieces with a somewhat aberrant use of Inca motifs, T.M. 91.121 (Fig. 25 here) and 91.282 (see note 4) also have replied warps.

7. The tunics in Figs. 18, 30, and 34 have heading cord end selvedges; so do the unsewn t'oqapu band tunic (see text and note 22) and the Inca key fragment T.M. 1965.40.5. The black and white checkerboard tunic T.M. 1966.7.172 has the tapestry wefts compacted against the warp loops, without a heading cord or chaining. In a few examples it was impossible to determine the exact conformation of the selvedges.

8. Examples with a zigzagging seam include the tunics in Figs. 16, 17, and 19, as well as the Lowie Museum tunic (Rowe, *op. cit.* Fig. 10), the t'oqapu band fragment T.M. 91.120 (Rowe, *op. cit.* Fig. 7) and the aberrant patterned 91.282 (see note 4). The seaming yarns used in T.M. 91.120 are red alpaca, Z-2S-4S-2Z.

9. End selvedges with chained warp loops are found in the Huari style tunics in the Bliss Collection, Dumbarton Oaks, as analyzed by Joy Mahler in S. K. Lothrop, W. F. Foshag, and J. Mahler, *Pre-Columbian Art*, New York, 1957. The majority of the analyzed examples in the Textile Museum collection also have this selvedge treatment. The heading cord noted by J. B. Bird and M. D. Skinner ("The Technical Features of a Middle Horizon Tapestry Shirt from Peru," *Textile Museum Journal* IV:1 (1974), p. 8) in the Glassell tunic is a much less common type of selvedge. This article also includes a good diagram of the warp end finish with the cut ends interlaced (p. 9, Fig. 4).

10. A. P. Rowe, *Warp-Patterned Weaves of the Andes*, Washington, D.C., 1977, p. 29.

11. Another example of a diamond band used in a bag is on exhibition at the University Museum, Philadelphia (SA 4609). The main part of the bag (containing coca leaves) is another fabric, also of interlocked tapestry, with weft stripes and a step fret design. This part of the bag is slightly trapezoidal in shape. The diamond band section is appended to it as a sort of tassel. This tassel is one and a half diamonds wide. The band has a red ground and the diamonds are (outside to inside) yellow, black, red, yellow (unstepped), and quartered red and black. The small rectangles are all red in the center, surrounded by yellow and then by black. The bag has a fringed tassel at each lower corner. This type of bag is found on the south coast, especially in the Nasca and Acarí areas. A typical example, without Inca influence, is in F. J. Dockstader, *Indian Art in South America*, Greenwich, 1967, no. 130. The broad tassels are usually done in a wrapping technique rather than tapestry.

12. The seams in the Lowie Museum tunic (John Rowe, *op. cit.* Fig. 10) are sewn in a zigzagging stitch with red alpaca (Z-2S-2Z). The armhole finish in this tunic is also decorative. It has a cross-knit loop stitch binding, two stitches of red alpaca alternating with two stitches of green. The overcasting on the neck slot and the cross-knit loop stitch binding on the lower edge are in tan cotton, however. This tunic is unusual in having lazy lines in the plain area. In addition, in one of the patterned bands not all of the wefts are interlocked, but only alternate turns. The white in the patterned bands is cotton rather than the more usual alpaca.

In the Philadelphia tunic (UM 27543, Rowe, *op. cit.* DW-1), the seam is a close figure-eight stitch in tan cotton, 7-8 mm. wide. On top of this is a zigzag in double running stitch made with two threads (each Z-2S) of red alpaca. This seam combines the functionalism of a strong cotton seam with the decorative effect of the zigzagging alpaca seam. The lower edge finish in this tunic is a cross-knit loop stitch binding in tan cotton, 8 mm high, with a crude zigzag like that on the seam embroidered above the binding. This tunic is unusual in having the band patterning and the join between the band and plain areas entirely dovetailed. Since the tunic is fragmentary and in fragile condition, only a drawing of it has been published (M. Uhle, Pachacamac. Report of the William Pepper, M.D., LL.D., Peruvian Expedition of 1896, Philadelphia, 1903, Pl. 7, Fig. 20b). The colors are a red ground with diamonds (outside to inside) yellow, blue, red, ochre, yellow, quartered red and blue. The small rectangles are alternately white with blue centers and blue with white centers. In a few places, green is used instead of blue, apparently at random.

13. The other example is the lower half of a tunic, T.M. 1966.59.27 (Rowe, *op. cit.* DW-4, Fig. 11).

14. The more aberrant of the two Textile Museum black and white checkerboard tunics (Rowe, *op. cit.*, BW-7, Fig. 3, T.M. 1966.7.172) has this feature, as do two of the three Inca key checkerboard tunics analyzed (Rowe, *op. cit.* IK-1, Fig. 4, T.M. 91.147, and IK-5, Fig. 6, T.M. 1966.59.28). The zigzag band tunic shown in Fig. 33 here also has a shoulder join.

15. Information kindly provided by Alan R. Sawyer.

16. A. F. Bandelier, *The Islands of Titicaca and Koati*, New York, 1910, Pl. LXI, opposite p. 259. Rowe (*op. cit.*) has persuasively suggested that the tunic is from the Colonial Period and that it had not been buried, but this hypothesis does not necessarily cast doubt on the report that the tunic was kept in the box.

17. See A. P. Rowe, "Late Horizon Textiles from the Lower Ica Valley," *The Junius B. Bird Pre-Columbian Textile Conference*, abstracts of papers with illustrative slides, Washington, D.C., 1973, pp. 17–18, slide 3.

18. Another slightly aberrant diamond band is in the Victoria and Albert Museum, accession number 1714–1869 (Dept. of Textiles, *Brief Guide to the Peruvian Textiles*, London, 1926, pl. XII). This is a fragmentary tunic, with all-alpaca warp and weft, and with striped alpaca embroidery. The color above the diamond band differs from that below. As in the cover tunic, the outer diamonds seem to be white, not yellow. The unusual feature is that the outer edges of the diamonds are unstepped. The small rectangles have been replaced by a fret design. It also appears that the background of the upper part of the band is different from that of the lower part. In the publication, the ground is described as "striped alternately in green and red," and it may be that the coloring is similar to the Brooklyn Museum tunic (Fig. 32 here), which is dark green above the band, red in the upper part of the band, green in the lower part of the band, and red below the band.

Another aberrant diamond plus key band, in the Museo Nacional de Antropología y Arqueología, Lima, is illustrated in L. G. Lumbreras and W. Lang, *Arte Precolombino. Primera Parte: Arte Texil y Adornos,* Lima, 1977, p. 173. This band is farther from the standard ones than is the band in Fig. 25.

A complete diamond band tunic, which must also be considered aberrant because of its simplified design and covering of small gold plaques, is in the Mujica Gallo Collection. It does have standard striped alpaca seaming. See A. D. Tushingham, *Gold for the Gods*, Toronto, 1976, cover and p. 112, no. 136.

19. One other such comparison may be cited, mentioned in John Rowe, *op. cit.* The alpaca-weft tunic is from a South American collection (TW-2), and the cotton-ground piece is a fragment in the Textile Museum (91.120, Fig. 7).

20. See S. K. Lothrop, W. F. Foshag, and J. Mahler, *op. cit.* (note 9), cat. no. 373, Pl. CLXI.

21. Rowe (*op. cit.*, TW-1) notes that Uhle's measurements (Uhle, *op. cit.*, note 12, Pl. 7, Fig. 19, text pp. 37–8) for this tunic are probably in error. The measurements I obtained were 86.5 x 68 cm, on the small side, although they cannot be considered precise on account of the poor condition of the specimen. Many of the warps in the plain areas are rotted.

Found in the same grave was a second tunic (UM 27570), which is entirely black without any tapestry patterning. It measures 80 x 76 cm, shorter than standard. Both warps and wefts are alpaca, and the thread count is relatively low, 7 warps and 33–38 wefts per cm (assuming the warp/weft direction is the same as in the other tunics). Like the other all-alpaca weft tunics in the sample, it has edge finishes in striped alpaca.

22. D. Menzel, *Pottery Style and Society in Ancient Peru*, Berkeley, 1976, p. 21 (grave Tf). The tunic is now in the Lowie Museum of Anthropology, University of California, Berkeley, cat. no. 16–6573.

23. See also A. F. von Gagern, "Peruvian Weaving," *The BASF Review* 21 (Feb. 1971), p. 185, for an illustration of another fragmentary t'oqapu band tunic, from Pachacamac, now in the Reissmuseum, Mannheim. This piece has a tan cotton ground and two rows of t'oqapu in three different designs. All the designs are unique to this piece—one with an animal reminiscent of coast textiles, and one that looks like an archaism with a late Nasca textile design source.

Another fragmentary t'oqapu band is shown in K. Akashi, *Textiles of Pre-Inca from Burying Grounds in Peru*, Kyoto, 1956, Pl. 49.

24. The Smithsonian q'asana patterned tunic (Rowe, *op. cit.*, Fig. 15). This tunic also has a narrow seam with colors matching the adjacent tapestry, over-